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ABSTRACT

This collection of papers represents an extension of analytic approaches and concepts from animal social ethology to the study of activities among stable groups of young children. A major emphasis of this research was on the description of organizational patterns in social behavior observed during periods of free play. The papers are: (1) "An Introduction to Ethological Perspectives on Preschool Social Organization;" (2) "Social Conflict and Peer Group Status;" (3) "Peer Attachment and Affiliative Subgroups;" (4) "Giving, Helping and Cooperation: The Beginnings of Reciprocal Altruism;" (5) "Differences in Play as a Function of Social Roles Within the Peer Group;" (6) "The Emergence of Social Structure in Normal and Clinical Groups of Unacquainted Children;" (7) "The Development and Stabilization of Social Interaction in a Clinical Peer Group;" and (8) "Discussion of Ethological Perspectives on Child Development." (MS)

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## Ethological perspectives on preschool social organization

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# ETHOLOGICAL PERSPECTIVES ON PRESCHOOL SOCIAL ORGANIZATION

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These papers were originally prepared as contributions to a symposium presented at the bienniel meeting of the Society for Research on Child Development during March of 1977, in New Orleans, Louisiana. A French translation of the complete work is currently in preparation.

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# An Introduction to Ethological Perspectives On Preschool Social Organizaion

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Ethology has frequently been characterized as a discipline concerned primarily with the direct observation of spontaneously occurring behavior in a naturalistic setting. Certainly, such concerns often distinguish ethologists from many other behavioral scientists. However, this simplistic characterization of the discipline fails to capture essential differences between ethological and more traditional psychological approaches to the study of behavior. Furthermore, since most psychologists have only neglected, rather than dismissed naturalistic research techniques, efforts to define ethology primarily on methodological grounds reflect a premature, and perhaps overly optimistic tendency to unify divergent conceptual perspectives within the behavioral sciences.

Important distinctions between the conceptual orientations of ethology and other behavioral disciplines have been repeatedly emphasized by researchers actively engaged in the comparative biological study of human and animal behavior (Blurton Jones, 1972; Kummer 1971; Tinbergen, 1963 ). The formulation of research questions by both human and animal ethologists reflect the influence of five quite

specific perspectives on the analysis of behavior. The first, and most fundamental set of questions concerns the organization, or structure of the behavioral phenomena which are of interest. The concern with providing an adequately detailed descriptive account of the behavioral capacities for a given species provides a common focus in all ethological research. Following the description of species characteristic action patterns, the ethologist may choose to systematically examine questions concerning the immediate causation and function of behavior. Although these latter two issues have dominated psychological research and theory, they play a relatively less important role in the early phases of ethological research. Rather than generating cogent, but often ad hoc operational definitions of abstract constructs which seem important as variables in research on the causation and function of behavior, the ethologist attempts to anchor this type of research in a previously verified descriptive account of species characteristic behavior. In addition to the questions of behavioral causation and function, a complete ethological analysis examines the historical changes in behavior during the course of ontogeny and phylogeny. Again, due to an emphasis upon a comprehensive account of behavioral organization, ethological approaches to development and evolution often differ from those typically found in developmental and comparative psychology.

Although concern with these five general questions suggests a fairly comprehensive and integrated conceptual orientation underlying

ethological research, the relative attention given to each of the different perspectives has produced some diversity within the field of ethology. Crook (1970) argued that there are currently two quite distinct approaches in modern ethological research. The first approach, referred to as Classical Ethology, focusses most frequently upon the organization of individual action patterns, their causation and development. The second approach, called Social Ethology or Sociobiology, deals more specifically with the organization of social behavior, its function and evolution.

The following papers represent an extension of analytic approaches and concepts from animal social ethology to the study of activities among stable groups of young children. A major emphasis in this research entailed the description of organizational patterns in social behavior observed during periods of free-play. The research stresses a model of social analysis originally developed by Robert Hinde (1975). This model distinguishes different levels of abstraction that are necessary in the analysis of social behavior. Table 1 shows four successive levels of organization in social behavior which are discussed in the present papers. The level of individual action patterns represents the lowest level of behavioral description. At this level, there is little difference between a classical and social ethological descriptive account of behavior. However, at the second level, that of interaction episodes, the social ethologist focuses on slightly different aspects of behavioral sequences. For example,

Table 1

CONCEPTUAL SCHEME FOR THE

ANALYSIS OF SOCIAL ECOLOGY*

| Level of Description | Basic Terms |
|---|---|
| I. Individual Action | - Action Patterns<br>- Behavioral Categories<br>- Classes of Activity |
| II. Social Interaction | - Dyadic Exchange<br>- Initiator<br>- Target<br>- Terminator |
| III. Dyadic Relationship | - Complexity<br>- Stability<br>- Reciprocity<br>- Asymmetry<br>- Role |
| IV. Group Structure | - Stability<br>- Status/Role<br>- Networks<br>- Hierarchies |

* Adapted from Hinde (1975).

special attention is given to action patterns that occur as initial or final elements in an interaction sequence. The third level of social analysis entails assessing regularities in specific patterns of social interaction which reflect the behavioral quality of dyadic social relationships. Finally, having provided a behavioral description of individual dyadic social relationships it becomes possible to examine patterns of organization among all relationships within the group. At this higher level of abstraction the behavioral analysis reveals social structures within the stable group.

The first three presentations in this series attempt to move from the lowest level of behavioral description to an analysis of more abstract patterns of social organization. The final three papers draw upon results from the initial descriptive analyses to relate patterns of social behavior to more general forms of play observed during unstructured periods within the preschool, and to the temporal processes of group formation and group stabilization.

Samples, Settings and Observational Techniques

Since the following papers often summarize observational data from the same social groups, it seems most economical to provide general information about the samples, settings, and observation techniques as part of the introductory comments. The present research findings are derived from five separate studies of different social groups during the past four years. Three of the studies were conducted in university preschool centers during the second half of the academic

year. Thus, these children had had at least four months of group experience prior to observational sampling. The remaining two groups of children were observed from the start of their group experience. Thus, in these latter two studies, information was available concerning changes in the organization of social behavior during group formation and stabilization.

The Langara Preschool Group. Observations at the Langara Preschool Center were conducted during the summer months of 1973. At the beginning of observations the group contained 18 children (10 boys and 8 girls). Since one girl left the group early in the observational session, data are presented for only 17 children ranging in age from three to five years (Mean = 52 months). Observations were conducted both indoors and outdoors using portable video equipment. Primary emphasis in the video samples was given to recording agonistic interaction through the use of matrix completion sampling techniques. In addition, regular instantaneous scan samples were obtained through direct observation of proximity patterns and play activity of each child.

The Simon Fraser Preschool Group. Observations at the Simon Fraser Preschool were conducted during the late spring of 1974. Although this group contained 16 children (8 boys and 8 girls), both one boy and girl were absent for over 25% of the observation days, and thus were eliminated from the sample. The remaining 14 children ranged

from three to five years (Mean = 48 months). Observations at Simon Fraser were conducted indoors throughout a four week period. Daily records of social behavior were obtained using five minute focal individual samples. Observations were tape-recorded and transcribed immediately after the observation period.

The Waterloo Preschool Group. Observations at the Waterloo Center were conducted during a six week period beginning in late January and ending in March of 1975. The Waterloo group contained 26 children; but seven children were absent for more than 25% of the observational days, and thus were not included in the final sample. Data are presented for 19 children (10 boys and 9 girls) who ranged in age from three to five years (Mean = 52 months). The Waterloo Preschool Center contained three rooms which were available during free-play periods. The largest central room was already equipped with video cameras and microphones. This equipment provided a permanent record of social activity during the observation period. Direct observation of focal subgroups provided records of interactions in the two other rooms of the preschool center.

The Clarke Preschool Group. Observations at the Clarke Institute of Psychiatry occurred during the summer months of 1976. The 11 children (10 boys and 1 girl) who ranged in age from five to seven years (Mean = 74 months) were referred to the Clarke Institute to participate in a summer training program for the enhancement of social skills.

Because of their inability to adjust to social demands from the school setting, none of these children had been able to attend regular school classes. Observations at the Clarke were conducted on four days of six consecutive weeks using direct observation techniques. Focal individual samples of social interaction, as well as instantaneous scan samples of proximity patterns and forms of play were tape recorded and transcribed immediately following daily observations.

The Ad Hoc Preschool Group. The Ad Hoc Group was comprised of seven unacquainted children (3 boys and 4 girls) ranging in age from 3½ to 4½ years (Mean = 51 months). These children were selected to participate in group play sessions scheduled for 2½ hours daily during a one week period. The play room was located in a university observation facility equipped with a fixed video monitoring system. Video records of social interaction were available for the entire play periods on days one through four.

Records of social interaction in all five groups were coded using a four item descriptive syntax. For each observed social exchange, the initiator, his action, the target, and the target's response were always noted. If one of the items in the description was unclear, the entire exchange was not coded. Reliabilities for use of the complete coding inventories were assessed using a percentage agreement formula. Comparisons were made between trained observers who coded social interactions from the same video-taped record of preschool free-play. Weekly agreement scores were always above 80%; higher

inter-observer agreements were evident in both of the later studies at the Waterloo Center and the Clarke Institute.

# Social Conflict and Peer-Group Status

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We're starting off the discussion of social organization with a consideration of social conflict within groups of children, not because conflict describes a major portion of their social interaction, but because the ethological analysis of social conflict is crucial for understanding group power relations; and power relations exist as a reliable and well formulated structural component of all groups we've observed. The extent to which other group relations may depend on or be coordinated with the stabilization of power relations is an important consideration, to be discussed later in this symposium.

Power relations in primates, and in children, are not chaotic, but are typically organized in terms of a group dominance hierarchy. The concept of dominance provides a good bridge linking ethological and psychological considerations. Dominance is a structural model for a group that describes all agonistic relations observed for all dyads in the group. Its meaning is only in relation to the group, and it is best viewed as an "emergent property" of groups at the structural level of analysis discussed in the introduction. It is not a property of individuals. While psychologists have tended to focus on "aggression", and have used the term as an individual descriptor or as a trait concept, ethologists have more characteristically bypassed this focus and

have been more concerned with the function and organization of conflict interactions within and for the group.

What I'd like to do today is combine both approaches in an examination of social conflict in three groups of young children. Dominance will be examined in terms of the various levels of analysis introduced -- that is, as a structural model, as a sequence of dyadic relations, and in terms of specific behavior patterns describing interactions. Then what I'd like to do is turn the psychological corner, and see what dominance itself can be used to explain. What implications does the ethologically derived model of dominance have for group members: their status, their "aggressiveness" or "submissiveness"? I'd also like to explore the concept of the group "scapegoat" in relation to dominance. Other members of this symposium will carry on the discussion of the relation of dominance to other social behaviors.

Dominance essentially involves asymmetrical social relations. Dyadic dominance describes the relative balance of social power between any two members of a social group, while a dominance hierarchy summarizes the organization of such power relations among all group members. In dyadic dominance, one individual typically submits to the other. In group dominance the hierarchy is governed by a linear rule, such that if A dominates B, and B dominates C, then A is dominant to both B and C.

Social dominance has been viewed as a basic dimension of social organization among primates, and has been related to a number of social

processes such as group defense (Jolly, 1972), social learning (Strayer, 1976), social innovation (Tsumori, 1967), and social play (Dolinhow & Bishop, 1972). Theoretically the formation and maintenance of a stable dominance hierarchy functions to minimize intra-group aggression by, in essence, the working out of a relatively stable place and set of prerogatives for each group member. Having learned the appropriate power sequence, each member is then able to anticipate and to avoid the adverse consequences of severe and continued aggression.

Figure 1 shows what a primate dominance hierarchy looks like in a group of pigtail macaques. This matrix represents systematic comparisons of wins and losses among all dyads in the group. The important thing to focus on is the distribution of interactions within the matrix. This distribution demonstrates very well the linearity of the dominance structure. There are no violations of status ranking. This matrix also illustrates an important conceptual point about dominance. It is a general descriptive concept that summarized stable social relations evident in the resolution of various forms of naturally occurring conflict. As you can see, the emphasis is on the resolution of sets of interactions rather than on the frequency of individual aggressive acts. The difference between aggression and dominance can be illustrated by noting that monkey C initiates the most aggression but is third in dominance, whereas monkey B, who is higher, initiates less aggression than five others who are below her in status.

Figure 1

Macaque Dominance Hierarchy

TARGET

| INITIATOR | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A ♂ | | 5 | 17 | 6 | 7 | 7 | 7 | 3 | 2 | 7 | 5 | 4 | 3 | 4 | 3 | 6 | 86 |
| B ♀ | 1 | | 13 | 3 | 4 | 2 | 4 | 1 | 1 | 1 | | 6 | 1 | | 1 | 2 | 40 |
| C ♂ | 1 | | | 24 | 19 | 18 | 20 | 22 | 4 | 8 | 6 | 13 | 5 | 8 | 4 | 7 | 159 |
| D ♀ | | 1 | | | 4 | 5 | 9 | 2 | 2 | 1 | | 2 | 3 | 6 | | 1 | 36 |
| E ♂ | | | | | | 6 | 7 | 4 | 5 | 3 | 2 | 3 | 4 | 2 | 5 | 3 | 44 |
| F ♀ | | | 2 | 1 | 1 | | 3 | 3 | 2 | 8 | 7 | 11 | 2 | 2 | 1 | 7 | 50 |
| G ♀ | | | | 2 | | | | 5 | 5 | 5 | 4 | 8 | 2 | 1 | 4 | 4 | 40 |
| H ♂ | | | | | | | 1 | | 1 | 4 | 3 | 2 | 4 | 2 | 1 | 1 | 19 |
| I ♀ | | | | | | | | | | 3 | | | | 1 | | 5 | 9 |
| J ♂ | | | | | | | | 1 | | | 2 | | | 1 | 2 | 3 | 9 |
| K ♂ | | | | | | | | | | | | • | • | 5 | 4 | 2 | 11 |
| L ♀ | | | | | | | | 1 | | | • | | • | 1 | 3 | 4 | 9 |
| M ♂ | | | | | | | | | | | • | • | | • | 1 | 3 | 4 |
| N ♂ | | | | | | | | | | | | | • | | 2 | 3 | 5 |
| O ♀ | | | | | | | | | | | | | | | | • | 0 |
| P ♀ | | | | | | | | | | | | | | | • | | 0 |
| TOTAL | 2 | 6 | 32 | 36 | 35 | 38 | 51 | 42 | 22 | 40 | 29 | 49 | 24 | 33 | 31 | 51 | 521 |

• = Tied Relation

The determination of social dominance rests on the identification of specific behaviors describing the initiation and termination of conflict episodes. In a recent paper (Strayer & Strayer, 1976) we identified the general categories of naturally occurring social conflict among children, and the specific action patterns which describe them are shown in Table 2. The response categories and specific action patterns comprising them are also shown. In particular, submissive responses to attacks and threats have been shown to provide the best fit for dominance relations among both primates and children. There are other classes of social conflict as well. Struggles over objects and space have also been used to index dominance relations. While the use of object/position struggles with young children does provide an index of social dominance, it differs somewhat from the order based on attacks and threats, principally because the loss or perhaps abandonment of an object is not the same as a submissive response.

The importance of submissive responses in defining group dominance structure was pointed out by Rowell (1966) in primate work, and it is evident in our work with children as well (Strayer & Strayer, 1976). Figure 2 shows all agonistic interactions that were initiated by children in the Langara group; regardless of the targets' response. There is nothing like a hierarchical structure evident here. But when we look specifically at classes of aggression leading to submission, the type of group structure shown in Figure 3 has typically been

Table 2

AGONISTIC ACTION PATTERNS

| Initiated Behaviors | Response Behaviors |
|---|---|
| **Physical Attack** | **Submission** |
| Chase | Help Seeking |
| Push-Pull | Cry-Scream |
| Hit | Rapid Flight |
| Kick | Cringe |
| Bite | Hand-cover |
| Wrestle | Flinch |
| | Withdrawal |
| **Threat Gestures** | **Counter** |
| Face & Body Posture | |
| Intention Hit | |
| Intention Kick | |
| Intention Bite | |
| **Object/Position Conflict** | **No Response** |
| Object Struggle | |
| Supplant | |

Figure 2

Dyadic Representation of All

Initiated Agonism at Langara

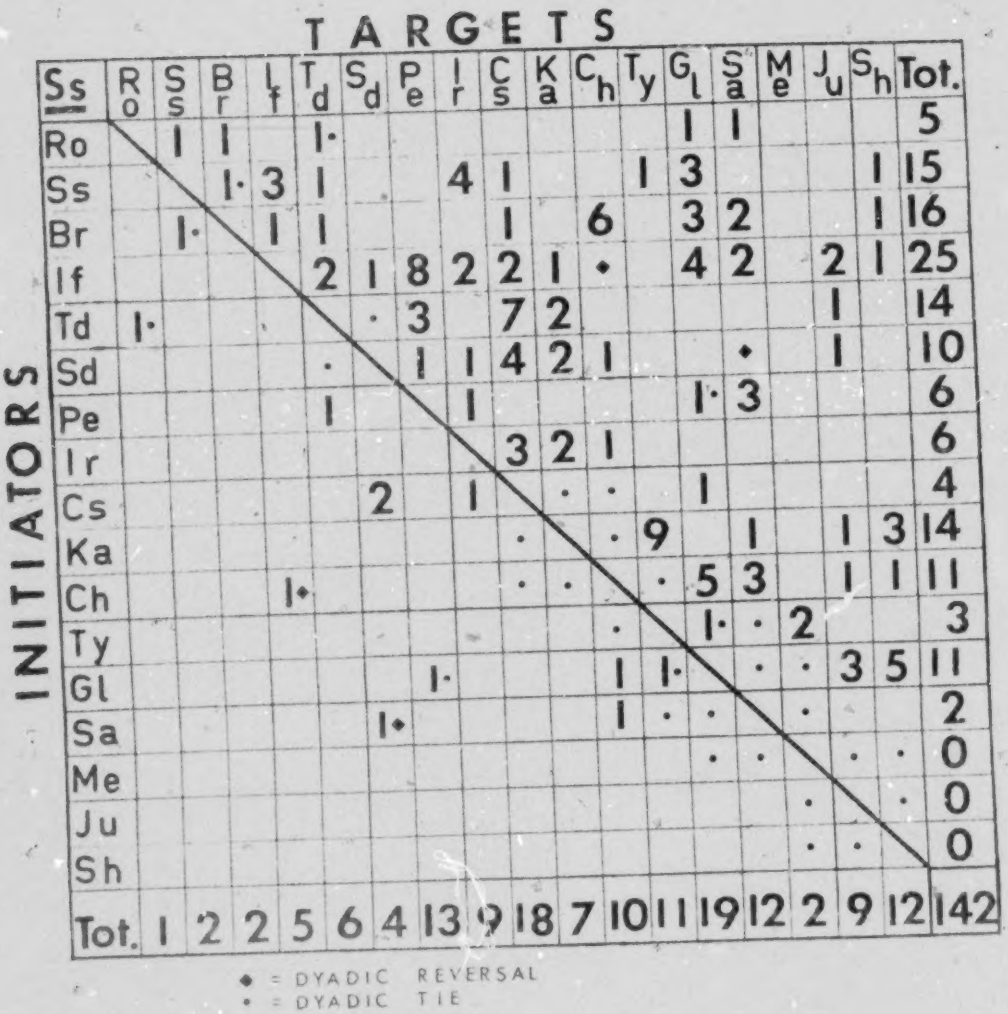
TARGETS

INITIATORS

| | Ro | Ss | Br | If | Td | Sd | Pe | Ir | Cs | Ka | Ch | Ty | Gl | Sa | Me | Ju | Sh | Tot. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ro | | 1 | 3 | 4 | 1 | | | 1 | 1 | | 1 | | 7 | | 1 | | | 20 |
| Ss | 1 | | 7 | 8 | 2 | 1 | 1 | 12 | 3 | | 1 | 1 | 4 | 1 | | | 2 | 44 |
| Br | 1 | 4 | | 7 | 3 | 2 | 2 | | 1 | | 8 | 1 | 5 | 5 | | | 1 | 40 |
| If | 3 | 3 | 2 | | 3 | 1 | 13 | 3 | 5 | 1 | | | 8 | 3 | | 2 | 1 | 48 |
| Td | 1 | | | 3 | | 4 | 6 | | 8 | 5 | 1 | | 1 | 3 | | 2 | 1 | 35 |
| Sd | | | | | | | 2 | 8 | 11 | | 4 | | 4 | 3 | | 1 | | 35 |
| Pe | 1 | | 1 | 9 | 3 | 4 | | 2 | | | 1 | | 7 | 9 | 1 | 1 | | 39 |
| Ir | | | | 1 | 1 | 1 | 2 | | 7 | 5 | 1 | 1 | 1 | | | | | 20 |
| Cs | 1 | 1 | 1 | 2 | 5 | 11 | | 3 | | | | | 1 | | | | | 25 |
| Ka | | | | | | | 1 | | | | | 11 | | 1 | | 1 | 4 | 18 |
| Ch | 4 | | 4 | 3 | 3 | 2 | 1 | | | | | 3 | 11 | 5 | | 2 | 2 | 40 |
| Ty | | | | | | | | | | 2 | | | 2 | | 8 | | | 12 |
| Gl | | 1 | 9 | 3 | | 3 | 6 | | | | 11 | 2 | | 1 | | 7 | 5 | 48 |
| Sa | | 1 | 4 | | 1 | 2 | 1 | | | | 1 | | 1 | | | | | 11 |
| Me | | | | | | | | | | | | 3 | | | | | | 3 |
| Ju | | | | | | 1 | | | | | | 1 | 1 | | | | | 3 |
| Sh | | | | | | | | | 1 | 1 | | | | | | | | 2 |
| Tot. | 12 | 11 | 31 | 40 | 22 | 32 | 36 | 30 | 37 | 14 | 29 | 23 | 53 | 32 | 9 | 16 | 16 | 443 |

Figure 3

Langara Dominance Hierarchy



evident. The entries below the diagonal in this Figure indicate episodes in which the linear dominance prediction was violated, and they are a measure of the stability of the dominance structure in terms of its linearity and rigidity. Linearity refers to the perfectness of fit of the linear prediction to all dyadic relations. In this case, two dyadic relations were not predicted by the linear dominance model, and are marked with a special symbol. Rigidity refers to the number of episodes in which a less dominant child nevertheless won in a minority of interactions. Five cells in this slide (a total of only six episodes) show cases where dominance relations were not completely rigid.

This sort of dominance structure has now been observed and replicated in three samples of young children, and I'd like to introduce today the findings among a group of clinic-referred children as well. Figure 4 shows the dominance hierarchy obtained at the Waterloo preschool. It's a very good replication of the Langara structure we saw earlier. Figure 5 shows the dominance hierarchy obtained at the Clarke clinic. Here too, we see that a stable dominance hierarchy characterizes the power relation of this group. These children, too, have worked out a stable structure for agonistic interactions. The extent of comparability of the three dominance structures is shown in Table 3. Here we see that the Clarke hierarchy is about as stable in terms of both linearity and rigidity as the other two groups. The implication we can draw is that the Clarke children are not deviant in

Figure 4

Waterloo Dominance Hierarchy

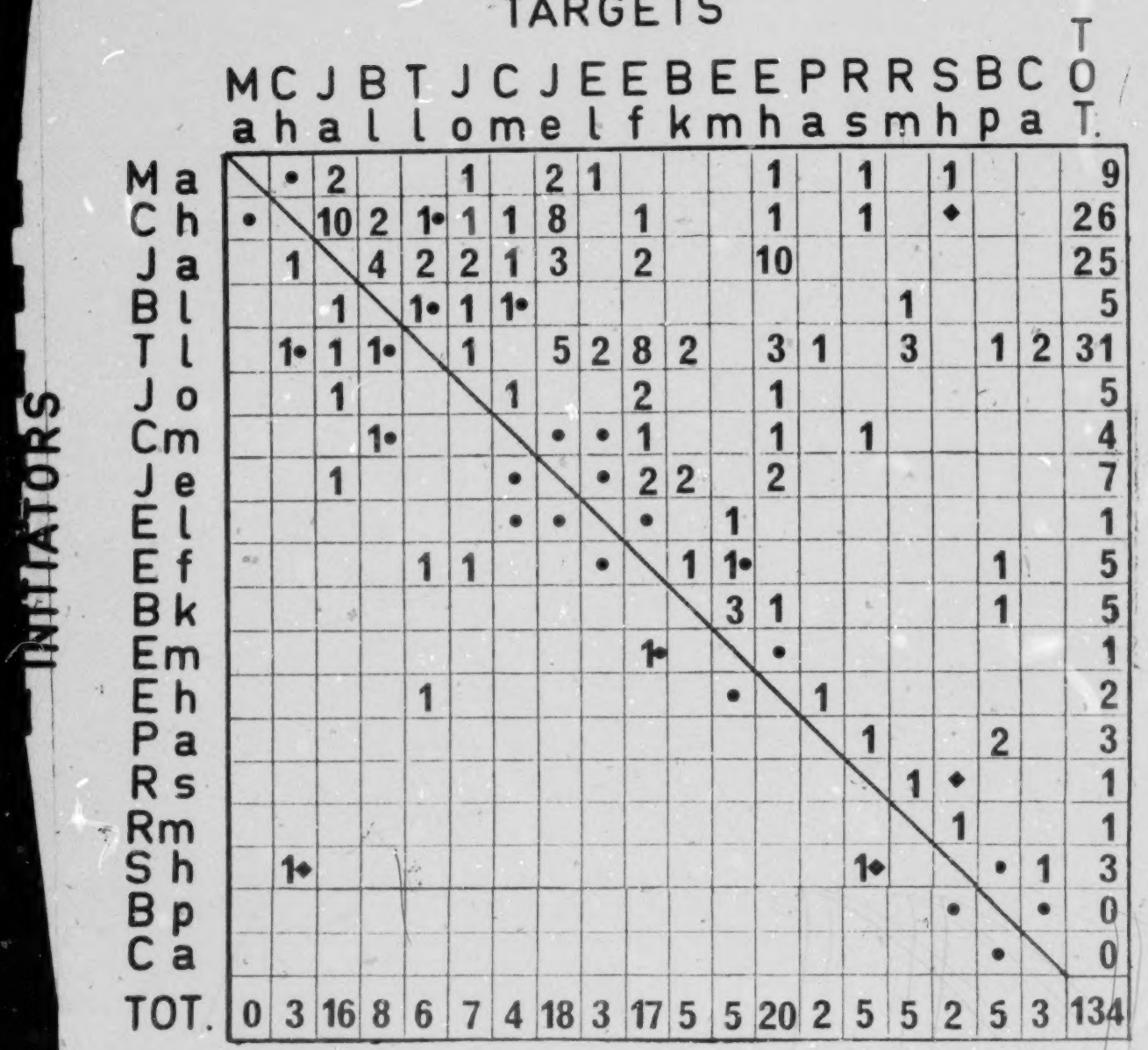


Figure 5

The Clarke Dominance Hierarchy

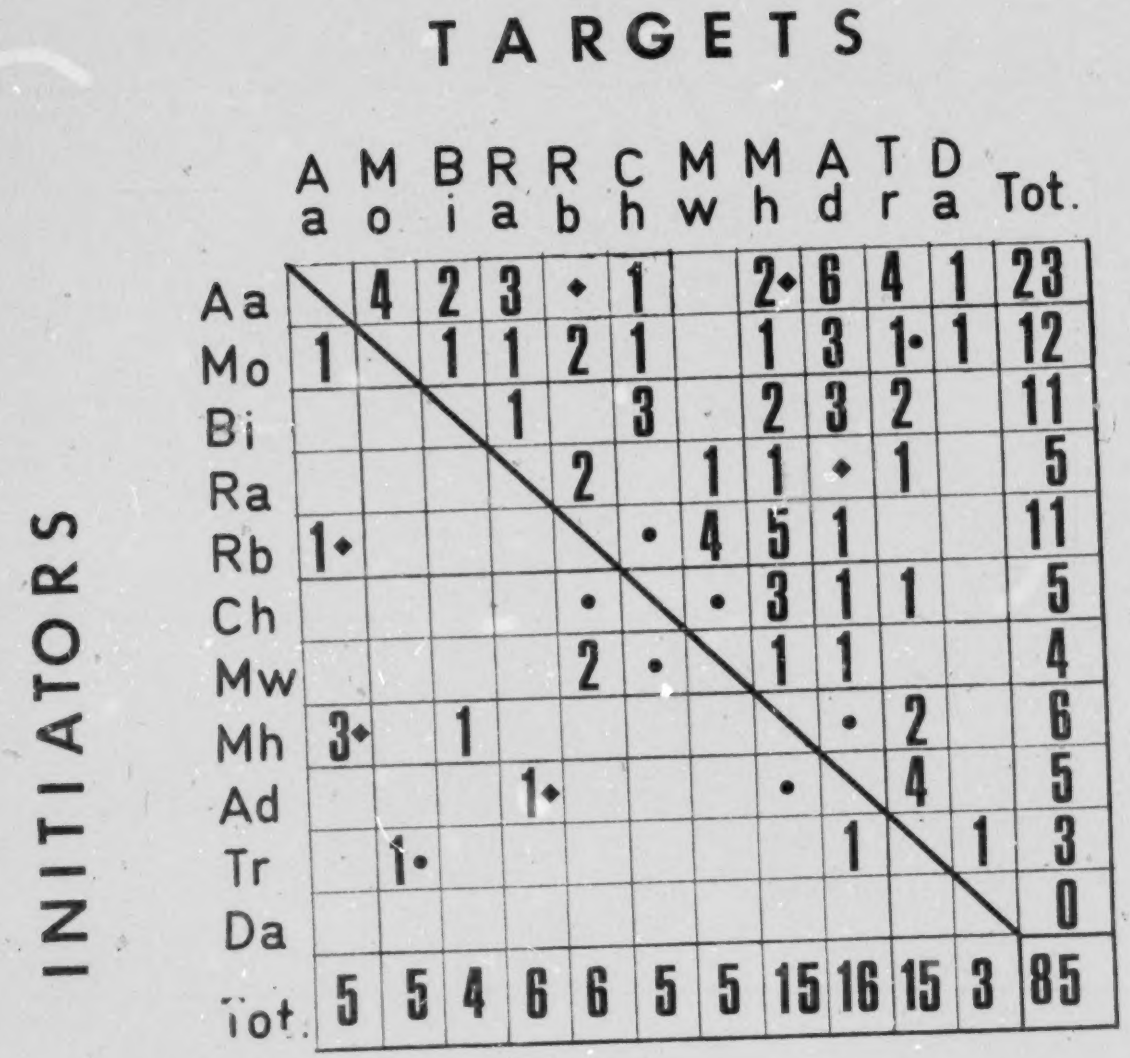


Table 3

COMPARISON OF DOMINANCE HIERARCHIES

| GROUP | LINEARITY | RIGIDITY |
|---|---|---|
| Macaque Monkeys | 100% | 98% |
| Langara | 98% | 92% |
| Waterloo | 96% | 94% |
| Clarke | 92% | 88% |

group functioning in terms of structuring their power relations. But remember that this hierarchy is based on specific action patterns; and the Clarke children, labelled as "aggressive" may engage in different forms of agonism than other groups.

Table 4 indicates that to some extent this proposition is true. The Clarke group initiates a relatively higher proportion of physical attacks vs. threat gestures. Their responses to agonism are similar to the other groups. This finding may indicate that these children were less able, or willing to ritualize their aggression in more mild forms of threat, and may have been less sensitive to the use of threats as social cues for establishing dominance relations. Other explanations may center on the fact that this group, with one exception, was composed of boys, and males in all groups have a higher rate of agonism and a higher proportion of physical attacks vs. threats than do females. One can also speculate that group functioning is influenced by group composition, and that a uni-sex group will work out dominance differently than a heterosexual group. It should also be noted that the Clarke group was in the process of group stabilization, a process which initially may result in the higher incidence of physical attacks. The only other noteworthy difference between the groups were a greater proportion of object/position struggles and a correspondingly high proportion of counter-responses in the Waterloo group. This may relate to the fact that this was a large group of children confined because of winter to an indoor space and to toy-related activities.

Table 4

RELATIVE FREQUENCY OF AGONISTIC ACTIVITY

| Category | Langara | Waterloo | Clarke |
|---|---|---|---|
| INITIATIONS | | | |
| Physical Attacks | 39% | 18% | 51% |
| Threat Gestures | 33% | 20% | 29% |
| Object/Position Struggles | 28% | 62% | 20% |
| RESPONSES | | | |
| Help-Seeking | 1% | 1% | 1% |
| Submission | 39% | 28% | 38% |
| No Response | 39% | 27% | 46% |
| Counter | 21% | 43% | 15% |

Now that we've considered dominance at the level of total group structure, I'd like to examine how it is that total agonism may be constrained by the group dominance structure. In Table 5 we see the distribution of total agonism as a function of dominance status. Using a median split to divide the group, among macaques it is clearly the high dominant animals who initiate agonistic interactions; and they do so among themselves about half the time. For children the picture is more variable, but we can see that low status children in all groups are the targets of only half the agonistic interaction, and there is some balance in the distribution of conflict. In the Langara, and especially the Waterloo group high status children actually confined the major portion of their agonistic interactions among themselves. In the Clarke group this was not the case. Low status children were targets of high status children more often than in other groups. Rather than discuss all the possible reasons, I'd like to focus on one which was salient in relation to the function of dominance structure. It was in the Clarke group that the most attempts to violate dominance relations were observed. Low dominant children at the Clarke initiated conflict with higher status children 56% of the time, compared with only 15% and 19% of such attempts at Langara and Waterloo. So, whereas a stable dominance structure was apparent in all three groups, total agonism was differently contained.

We've talked about dominance conflict at the level of group structure and relations. What I'd like to do now is to look at

Table 5

DISTRIBUTION OF AGONISM AS A FUNCTION OF STATUS POSITION

| GROUP | H → H | H → L | L → H | L → L |
|---|---|---|---|---|
| Macaque Monkeys | 46% | 45% | 0% | 9% |
| Langara | 36% | 28% | 13% | 23% |
| Waterloo | 55% | 19% | 13% | 14% |
| Clarke | 23% | 46% | 20% | 12% |

individual behavioral profiles and briefly examine two individual or personality constructs in relation to the child's functioning in the dominance structure. The concepts are that of the "aggressor" and the "scapegoat".

The relation of dominance to aggression has often been debated. In all three groups of children observed the most aggressive children were not the most dominant. The dominance status ranking of the most aggressive child (i.e., those who initiated the most agonism towards others) in each group ranged from position 3 to 14 in dominance.

The concept of the group scapegoat is historically compelling, and clinical interpretations are plentiful. I believe we can present you with some interesting data in an attempt to explain "scapegoatism" in relation to the group dominance structure. Three children were identified in each group who were the most aggressed against children in terms of both frequency and number of children who targetted them. These children were not necessarily the lowest in dominance rank. At the Clarke they were in the bottom third of the hierarchy, but at Waterloo and Langara they were in the middle. These children were neither more submissive, nor more aggressive than the average child in their group. But what they were was either insensitive to or deliberately contrary to social dominance relations in the group. The "scapegoats" aggressed "inappropriately" three times as often as the average child in each group. Simplistically, not keeping your place does have adverse consequences.

The ethological construct of group dominance structure has certainly opened up a rich area for studying individual as well as group behavioral dynamics. Although the study of social dominance and power relations has now been more thoroughly investigated than other social dimensions, a more adequate understanding of social adjustment obviously requires more attention to processes such as affiliation, altruism, play, and to the intricate process of group formation and stabilization. The following papers will examine these areas.

# Peer Attachment and Affiliative Subgroupings

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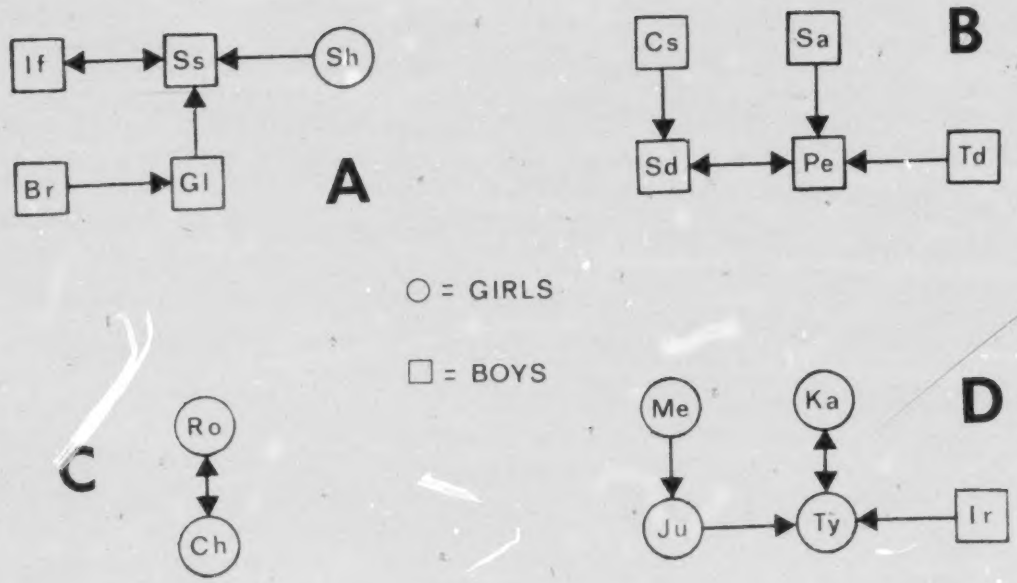
Although ethological techniques for the analysis of social conflict and group status hierarchies have proved useful in the description of children's power relations, correspondingly sophisticated methods are not available for the description of cohesive bonds between age mates in a stable group. At a theoretical level the relative neglect of positive social relationships is somewhat paradoxical, since the analysis of social dominance makes sense only when one assumes that there are more important cohesive factors which make group membership an attractive option for all individuals. It is exactly such cohesive factors which would lead to the social aggregation of individuals and ultimately necessitate the ritualization of aggressive, anti-social tendencies in the behavioural system we call dominance.

Although the ethological analysis of social bonding has not focused at the level of peer-group organization, considerable progress has been made in the description of primary attachment between parents and offspring. The theoretical works of Bowlby (1969, 1973) and the Harlows (1965) provide a reasonable conceptual starting point for the analysis of secondary affectional ties which link individual children to age mates in the preschool group.

In our first efforts to detect social bonds and affiliative structures within preschool groups, we relied on techniques which had been employed to assess social proximity patterns within feral groups of old-world monkeys. The procedure simply entailed mapping the location of all group members at regular intervals over an extended observational period. From the resulting behavioural maps we were able to determine the "Nearest Neighbour" of each child in each sample. By comparing the relative frequency that each child was spatially close to other group members throughout the sampling period we determined the most frequent "Nearest Neighbour" for each child in the group. Figure 6 shows the results of this mapping procedure for the Langara Preschool Centre. Four distinct subgroupings of children were evident. In each subgroup there was a focal dyad with two individuals who were most often in close proximity with each other. The remaining children were most frequently observed in proximity with one of the children in the focal dyad, except for two children who assumed a more peripheral role by being in proximity most often with a central, but not focal group member. Identical affiliative networks have recently been identified in the analysis of "Nearest Neighbour" data collected independently on four preschool groups by Rona Abramovitch at the University of Toronto (Abramovitch & Strayer, 1976). In general, membership and status within the affiliative networks appears more directly related to a child's gender than to his position within the social dominance hierarchy. Thus, it seems that these affiliative networks

Figure 6

Langara Nearest Neighbor Sub-groups



may reflect a second form of social structure within preschool groups that may be independent of, or be only indirectly related to social dominance.

However, these preliminary sociometric representations of average spacing tendencies do not provide an adequate description of social bonds between children since they fail to distinguish the individual's role in maintaining proximity with other children in the group. A child may be persistently followed by, and thus in proximity to another group member even though the two seldom engage in positive forms of social interaction. Given this limitation in the behavioural mapping and nearest neighbour procedure, our subsequent analyses of cohesive bonds and affiliative structures have employed observational techniques which parallel the interactional analysis of social dominance and correspond more closely with the conceptual model for the analysis of social organization which was outlined in the introduction to the symposium.

Table 6 shows the organization of an affiliative behaviour inventory which was used in three more recent studies of preschool social organization. Although the list of action patterns and behavioural categories does not completely describe all possible forms of prosocial behaviour, these activities occur at a relatively high rate in preschool groups and, perhaps more importantly, provide a potential behavioural link for the analysis of primary and peer social attachments.

Having selected these individual action patterns as possible indices of peer attachment, our first task was to determine empirically

Table 6

AFFILIATIVE ACTION PATTERNS

| Initiated Behaviors | Response Behaviors |
|---|---|
| Proximity | Proximity |
| Approach | |
| Social Orientation | Social Orientation |
| Gaze | |
| Glance | |
| Look | Physical Contact |
| Physical Contact | |
| Hand-to-Body | |
| Body-to-Body | |
| Shoulder-Hug | Postural Signals |
| Hold-Hands | |
| Pat | |
| Postural Signals | No Response |
| Beckon | |
| Forward-Lean | |
| Head-Nod | |
| Posture-Adjust | |

how these behaviours were organized in typical social exchanges. Table 7 shows the transition probabilities between the different forms of behaviour in dyadic exchanges observed at the University of Waterloo Daycare Centre. The number in parentheses following each form of initiated action indicates the frequency of dyadic exchanges which began with that particular pattern. The most striking result in this table is the generally high probability that any form of initiated affiliative action will lead to No Response from the social target. Over half of all affiliative overatures, were apparently ignored by the person to whom they were directed. When the target responded, the most likely form of action was a Social Orientation Response. This was especially true for dyadic exchanges that began with a Social Orientation pattern. Thus reciprocal eye-contact occurred at a relatively high rate in this preschool group. Finally, its important to note that nearly 60% of the observed dyadic exchanges began with the Proximity pattern - Approach. This finding has been repeated in all three groups observed using the present affiliative inventory, and suggests that the maintenance of interpersonal proximity is a very important part of our assessments of affiliative social behaviour.

Having identified regularly occurring patterns of dyadic affiliative exchange, our second task entailed examining the extent to which these forms of social exchange provided a convergent measure of affiliative activity for particular dyads in the group. Given the high probability of No Response to many affiliative initiations, we

Table 7

TRANSITION PROBABILITIES BETWEEN ELEMENTS
IN DYADIC AFFILIATIVE EXCHANGES

| INITIATED ACTION PATTERN | RESPONSE CATEGORY | | | | |
|---|---|---|---|---|---|
| | Proximity | Social Orient | Physical Contact | Postural Signals | No Response |
| Approach (2302) | .00 | .34** | .00 | .06** | .59** |
| Gaze (141) | .01 | .65** | .00 | .06 | .28** |
| Glance (364) | .00 | .59** | .00 | .01 | .41** |
| Look (661) | .02 | .41** | .00 | .00 | .57** |
| Body-Body (175) | .00 | .16** | .03 | .06 | .75** |
| Hand-Body (166) | .00 | .30** | .01 | .04 | .46** |
| Posture-Adjust (228) | .00 | .35** | .00 | .04 | .61** |

** Exchanges selected as regularly occurring forms of interaction.

were initially interested in assessing whether children generally received social responses from some group member, but less often from others. With the exception of visual exchanges initiated from outside of personal space (Look-Look and Look-No Response), the dyadic correlations between exchanges beginning with the same affiliative action pattern were reasonably high. These correlations ranged from .38 to .67 and had a median value of .56. Thus there was a strong positive relation between the frequency of acknowledged and ignored affiliative overatures directed toward the same social target. It was not the case that initiators received responses from some children and were usually ignored by others. Instead, it seems that affiliative behaviours were directed toward selected group members who sometimes responded and sometimes ignored the initiated action.

Dyadic correlations between the frequency of initiated exchanges from each of the four general categories of affiliative behaviour were uniformly high. In the Waterloo group, these category correlations range from .67 to .82 and had a median value of .74. Thus there was a high degree of association in the frequency of initiated affiliative activity to specific social targets. This finding suggests the general categories of social behaviours which have been used in the analysis of parent-child interaction provide convergent measures of affiliative preferences, or peer-attachments within the preschool group.

Given the high degree of association in the dyadic initiation of the present forms of affiliation behaviour, a total interaction score was computed for each directional dyad in the Waterloo group by summing the frequency of all initiated activity. Comparisons of the relative proportion of each child's behaviour that was directed to all possible group members permitted identification of a behaviourally based first preference for each child. These preferences are shown graphically in Figure 7.

The affiliative organization of the Waterloo group consisted of three social networks. The structure of these subgroups was quite similar to those already reported for the Langara sample. Each subgroup contained a focal dyad where members had a reciprocal affiliative preference. In each network, one member of the focal dyad was selected more often as a most preferred target by other group members, and consequently appears as the central individual in the subgrouping. Finally, once again there were a number of children who appeared more peripheral to the network because their most preferred affiliative target was a central, but not focal subgroup member.

Very similar results were obtained in the analysis of dyadic affiliative interaction in the Simon Fraser project. With this sample correlations between the major categories of activity ranged from .47 to .83 and had a median value of .61. Once again, examination of behaviourally defined preference revealed distinct affiliative networks which are shown in Figure 8. Each network was again characterized

Figure 7

Waterloo Affiliative Networks

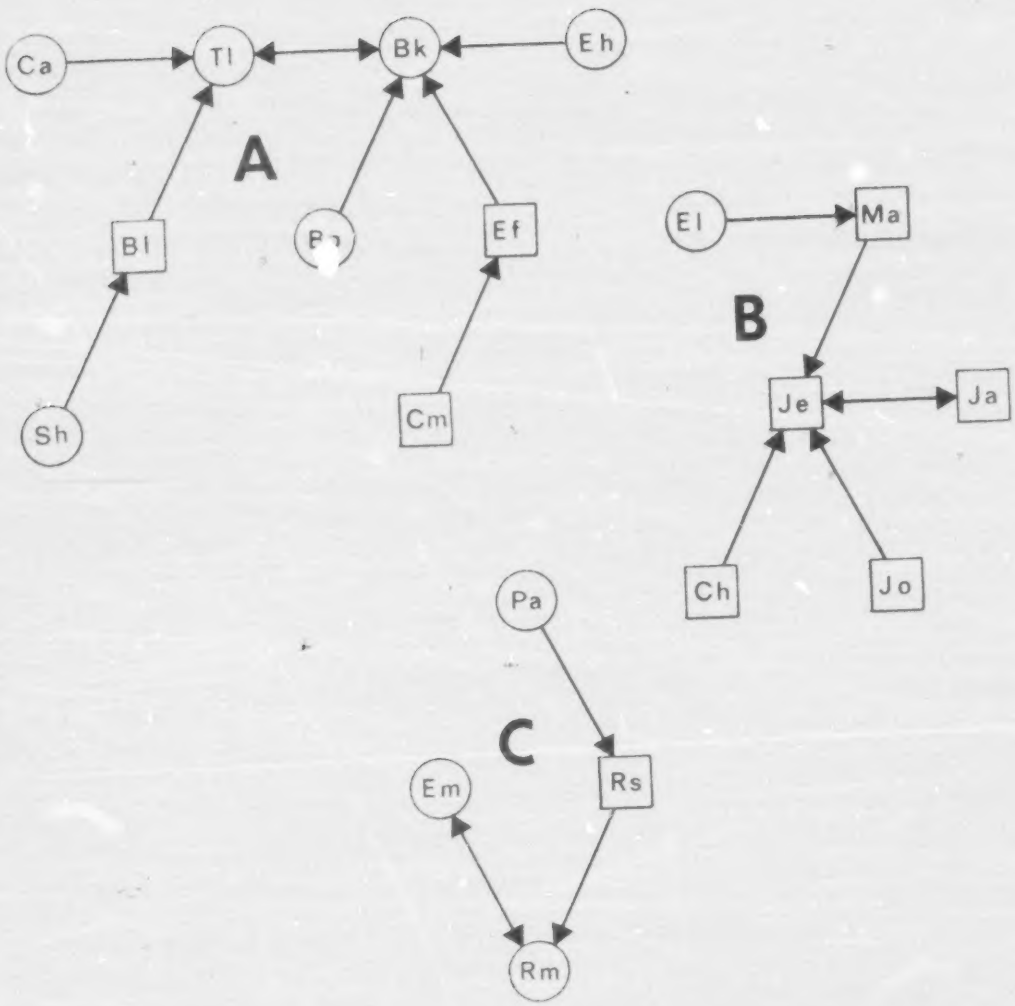
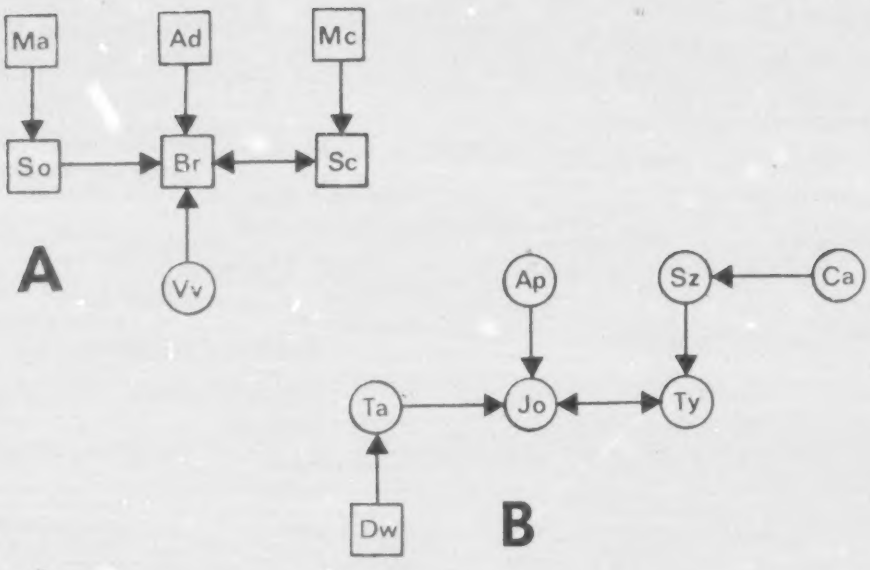


Figure 8

Simon Fraser Affiliative Networks



by a focal dyad with a reciprocated affiliative preference. And finally, once again the majority of children in each subgroup were of the same sex.

The last study in this series produced a somewhat unexpected result. The affiliative structure of the clinical group at the Clarke Institute failed to divide into distinct subgrouping. Furthermore, as shown in Figure 9, there were no reciprocal preferences evident in the affiliative network. The particular reasons why this set of children differ from the previous groups will be discussed in some detail by later participants in the symposium. At this point its probably sufficient to note that estimates of weekly stability in affiliative preferences among members of the Clarke group were on the average substantially lower than those of the other preschool groups. The greater variability in the social specificity of peer attachment benaviour among the Clarke children corresponds well with prior clinical reports concerning the difficulty these children had had in adjusting to a peer-group. But such interpretations should be examined cautiously, since the variability in social preference may equally well be attributed to social pressures which the children necessarily encountered during the process of group formation.

Before closing, I would like to return to a issue raised earlier in this presentation. To what extent does knowledge of group dominance relations facilitate our understanding of affiliative exchanges among preschool children? Figure 10 shows the dyadic frequency of social

Figure 9

The Clarke Affiliative Network

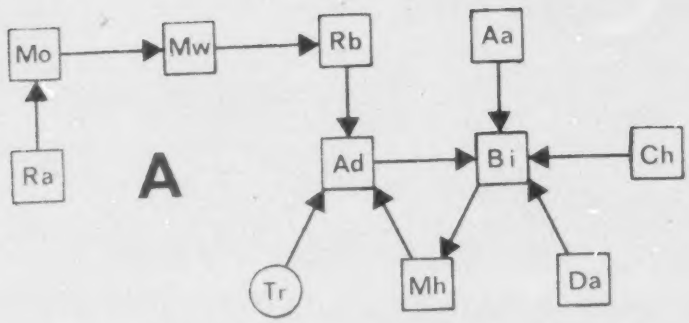
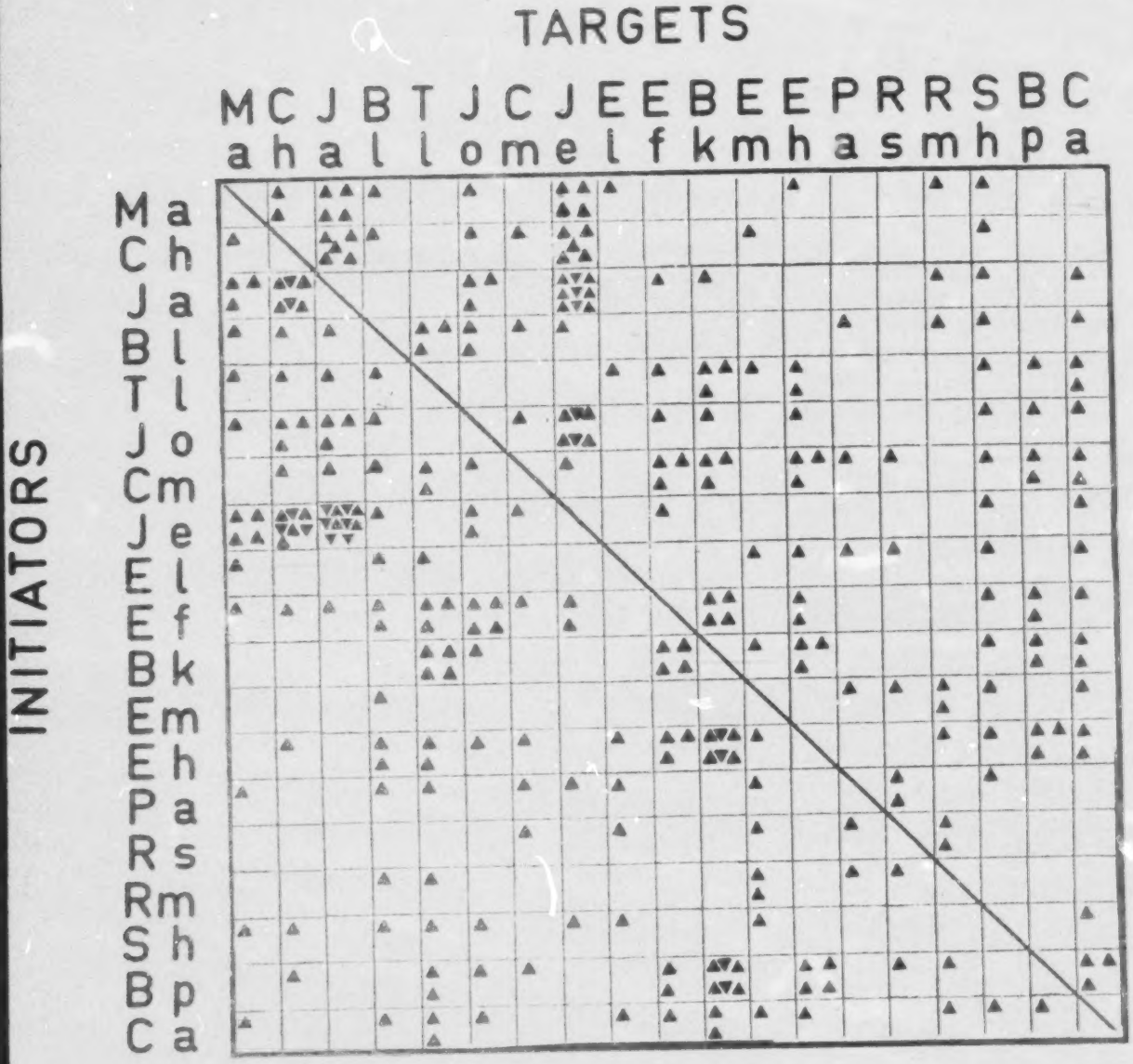


Figure 10

Dyadic Representation of Approaches at Waterloo with Childnen Arranged According to Dominance Rank



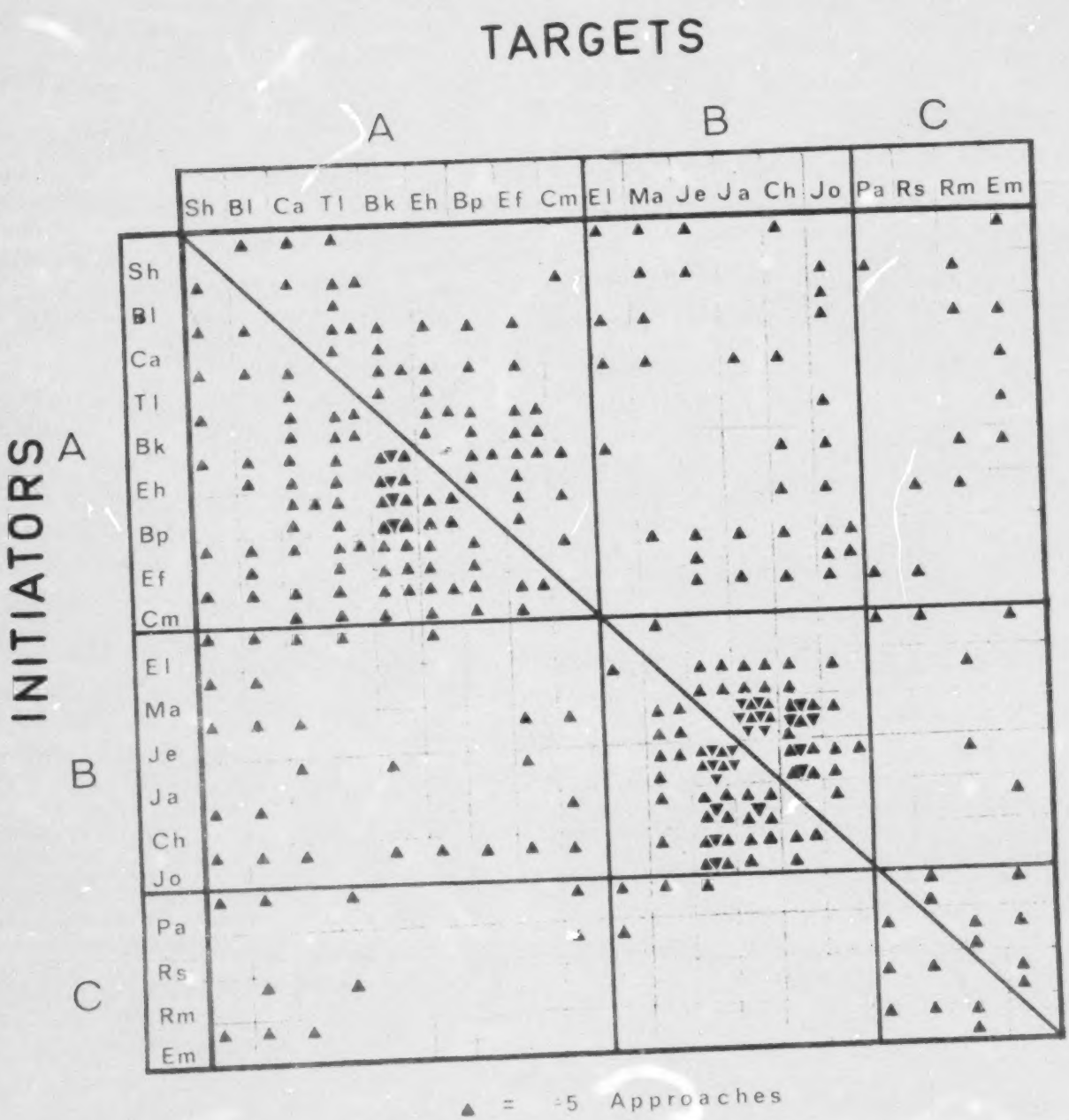
approaches as a function of children's dominance rank. This presentation of affiliative initiations provides a chaotic picture of affiliative activity with the preschool group. However, when the ordering of children in the matrix is rearranged according to their status within the affiliative networks, rather than within dominance hierarchy, as in Figure 11, some order begins to appear in the dyadic matrix. The organizing principle for this final matrix is radically different than the one used in assessing asymmetrical power relations. Observations tend to cluster around the diagonal of the matrix in regions quite close to the focal figures in each affiliative network. Some indication of the importance of each network is also evident in this figure. Approximately 75% of all initiated affiliative activity is directed toward children from the same affiliative subgroup. Thus although the social networks were defined in terms of each child's most preferred affiliative target, the resulting affiliative structure provide the social context for the majority of all children's affiliative behaviour.

Finally before closing, I would like to make two additional comments. Throughout this presentation I have referred to peer-attachment as a unidirectional, that is, not necessarily reciprocal, social preference. Future research should attempt to expand this conception of a social bond by exploring reciprocity in attachment behaviours among peers. Certainly we have discovered a number of reciprocal attachments that would meet our intuitive definitions of a

Figure 11

Dyadic Representation of Approaches at Waterloo

Showing Affiliative Network Membership



friendship. It seems quite likely that the number of friendships within each group may have been greater than what was evident in our graphic representation of affiliative networks. Frequency of activity alone seems to provide only one measure of personal attachment. Much more attention must be given to both the quality and sequencing of cohesive social interaction if we hope to provide a more valid measure of early childhood friendships. My second comment concerns possible implication of our findings to recent speculations by Melvin Konner (1975) about the biological validity of the same-age peer-group. Our repeated identification of distinct affiliative networks has led us to question the currently accepted definition of preschool group; a definition that stresses an aggregation of children assembled to receive a particular social service. Perhaps we should pay greater attention to the natural behaviour of today's preschool child in our efforts to both define and design a biologically valid peer-group experience.

# Giving, Helping & Cooperating: The Beginnings of Reciprocal Altruism

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The concept of altruism has recently gained prominence as a fundamental construct in the biological analysis of social organization. The work of Hamilton (1964) and Trivers (1971) has clearly demonstrated the evolutionary impact of this class of behavior. However, little research has been completed which attempts to isolate the social mechanisms which control or regulate naturally occurring altruism. It seems likely that the forms of interactions and social relationships discussed in the preceeding two papers should have some direct influence on the emergence of "normative altruism" (Rosenhan, 1970) among preschool children. However, the role played by altruistic behavior in the social organization of preschool groups has been less conspicuous than that of dominance or affiliation. The altruism which occurs in a group of preschool children may assume subtle and variegated modes of expression. In addition, most types of altruistic behavior occur relatively infrequently when compared to other classes of social activity. All of these characteristics contribute to the impression that altruistic behavior may be of secondary importance in influencing social organization within the preschool. The present research was directed toward elucidating how normative altruism may serve to

strengthen affiliative bonds, and perhaps regulate the amount of agonistic interaction which occurs in young children's social groups.

The present report involves an examination of altruistic behavior in four groups of preschool children. This study must be considered preliminary since data for each group were collected using slightly different coding and observation techniques. The purpose of the analyses described in this report was to attempt to explore particular hypotheses about the general function of altruism in preschool social organization. Altruistic behavior was explored with reference to its possible similarity in structure and distribution across different social and ecological settings. The degree to which prosocial interactions could be described as reciprocal in nature was also a major concern. Additional questions which guided the research referred to the targets of prosocial actions. That is, did children direct altruistic actions generally to all other peer group members or to specific individuals? Finally, what was the relationship between altruism and the affiliative and agonistic social structures evident in young children's peer groups?

To examine these questions, spontaneously occurring altruism was recorded during free play in the Langara, Waterloo and Clarke groups previously described. An altruism inventory which operationally defined object-related, cooperative and helpful actions was used to determine the range and nature of behavior observed during interaction episodes. Table 8 shows the molecular units of behavior which were

Table 8

ALTRUISTIC ACTION PATTERNS

| Initiated Behaviors | Response Behaviors |
|---|---|
| Object Activity | |
| Give | Take |
| Offer | Hold |
| Take | Keep |
| Share | Share |
| Exchange | Reject |
| Grab | No Response |
| Cooperative Activity | |
| Task Cooperation | Cooperate |
| Play Cooperation | Play Cooperate |
| | Reject |
| Helping Activity | |
| Direct Help | Accept |
| Indirect Help | Reject |
| Play Help | |

included in this inventory. Naturalistic observations were conducted using video scan sampling for the two normal preschool groups, and direct observational sampling of focal individuals for the atypical group. All defined forms of altruistic behavior were coded noting the initiator, his activity, the recipient, and the response of the recipient. In contrast to the dyadic analyses conducted with the agonistic and affiliative data, analysis of the altruism data focused on rates of initiation and receipt of particular types of behavior. Since many of the patterns described by the inventory occurred infrequently, forms of initiation within each category (i.e., object-related, cooperative, and helping) were combined to yeild three general measures of the frequency with which each child initiated and was the recipient of each particular category of behavior. These latter measures were then time-corrected according to the variable lengths of time that children were observed to produce individual rate estimates for each category of action.

The first descriptive analysis of this data involved computing average rates of occurence for each form of altruism in each of the three locations (See Table 9). This analysis indicated that object-related activity occurred at approximately the same rate per hour in each of the three preschool samples. This similarity among groups was especially surprising given the differences in settings and social composition. Although the mean rate of cooperation varied across groups, the atypical children showed no deficit in this form of activity. At Waterloo and the Clarke, helping occurred with nearly the same mean rate, however this final class of activity occurred almost twice as often per

Table 9

Mean Rates Of Altruistic Activity

| GROUP | OBJECT ACTIVITY | COOPERATION | HELPING | TOTAL |
|---|---|---|---|---|
| Langara | 5.85 | 4.27 | 2.31 | 4.14 |
| Waterloo | 5.61 | 2.53 | 0.53 | 2.89 |
| Clarke | 5.28 | 3.74 | 0.99 | 3.30 |

hour at Langara. Finally, the total rates with which the three types of altruictic behavior combined occurred per observation hour for the three groups did not appear to differ substantially.

The similarities between the Waterloo and the atypical Clarke groups in rates of helping and cooperative activities may perhaps be attributable to the similarities in the settings in which the social interaction in the two groups occurred. As was noted in the introduction to the symposium, observations were completed on these two groups while they engaged in free play in an indoor playroom. On the other hand, the Langara children spent most of their time in a large outdoor area. Perhaps outdoor activities involved more opportunity for helping and cooperative behavior.

When the relative distribution of actions in each of the behavioral categories were examined it was clear that all three groups were similar in that they engaged in object-related activities most frequently. These activities accounted for approximately 40-50% of all behaviors observed in each of the three groups. In addition, within this category the Give/Take interaction was observed to occur most frequently in all three groups. Cooperative activities were the next most frequently occurring behaviors and they accounted for approximately 35% of the total actions observed. Play Cooperation accounted for the major proportion of behaviors recorded in this category for the Waterloo and Clarke groups, while Task Cooperation was recorded most often for the Langara group. The least frequent

prosocial interactions, which accounted for only about 15% of the total, were those which involved helping. Again the behaviors within this category were similarly distributed for all three groups with Play Help/Accept being the most frequently recorded interaction.

A further similarity in the nature of altruism in each of the groups was the high degree of social specificity evident in the observed behavior. That is, children directed prosocial actions toward a limited number of peer groups members. Between 24 and 39% of all prosocial actions for each child were directed toward the most preferred peer target while between 18 to 23% were directed toward the second most preferred. In general, the data for each of the three groups indicated that approximately 70 to 80% of all prosocial actions were directed exclusively toward the first four target preference of each child.

In order to assess the extend to which behavior within the three groups was reciprocated the degree of association between initiation and receipt of prosocial actions was examined. The overall correlation for all three groups combined showed a significant positive relationship between giving and receiving altruistic behavior ($r = +.55$, $p < .01$). Separate analyses were also conducted for each of the three groups. These latter analyses showed that reciprocity in altruistic behavior was greatest in the Langara group, where the correlation between initiation and receipt of prosocial behavior was +.83 ($p < .01$). At Waterloo this index of reciprocity was somewhat lower but

still statistically significant ($r = +.46$, $p < .05$). However, reciprocity was not evident in the initiation and receipt of prosocial behavior in the Clarke group. In this group there was virtually no relation between rate of initiation and receipt of behavior ($r = -.06$, N.S.). Thus, although reciprocity appeared to characterize the interaction of the normal groups, it did not characterize the altruistic interaction which occurred in the atypical group.

The fact that the great majority of prosocial actions were directed toward a limited number of social targets and that altruistic social interactions were marked by reciprocity (at least in the normal groups) led logically to the question of whether targets of children's altruism were closely affiliated with the initiator of the behavior. To answer this question, both altruistic and affiliative choices were compared in the Waterloo and Clarke groups. Since these comparisons required identification of both the most preferred affiliative and altruistic target, only children with clear preferences in both domains were included in the analysis. The data from the Langara group was not included in the sociometric analysis as affiliative preferences were determined using the Nearest Neighbor procedure described earlier in the symposium. It was unclear whether preferences based on Nearest Neighbor data are comparable to those obtained through the use of initated affiliative behavior described in the earlier paper on peer attachments. However, sociograms could be constructed to describe the correspondence between affiliative and altruistic preferences in

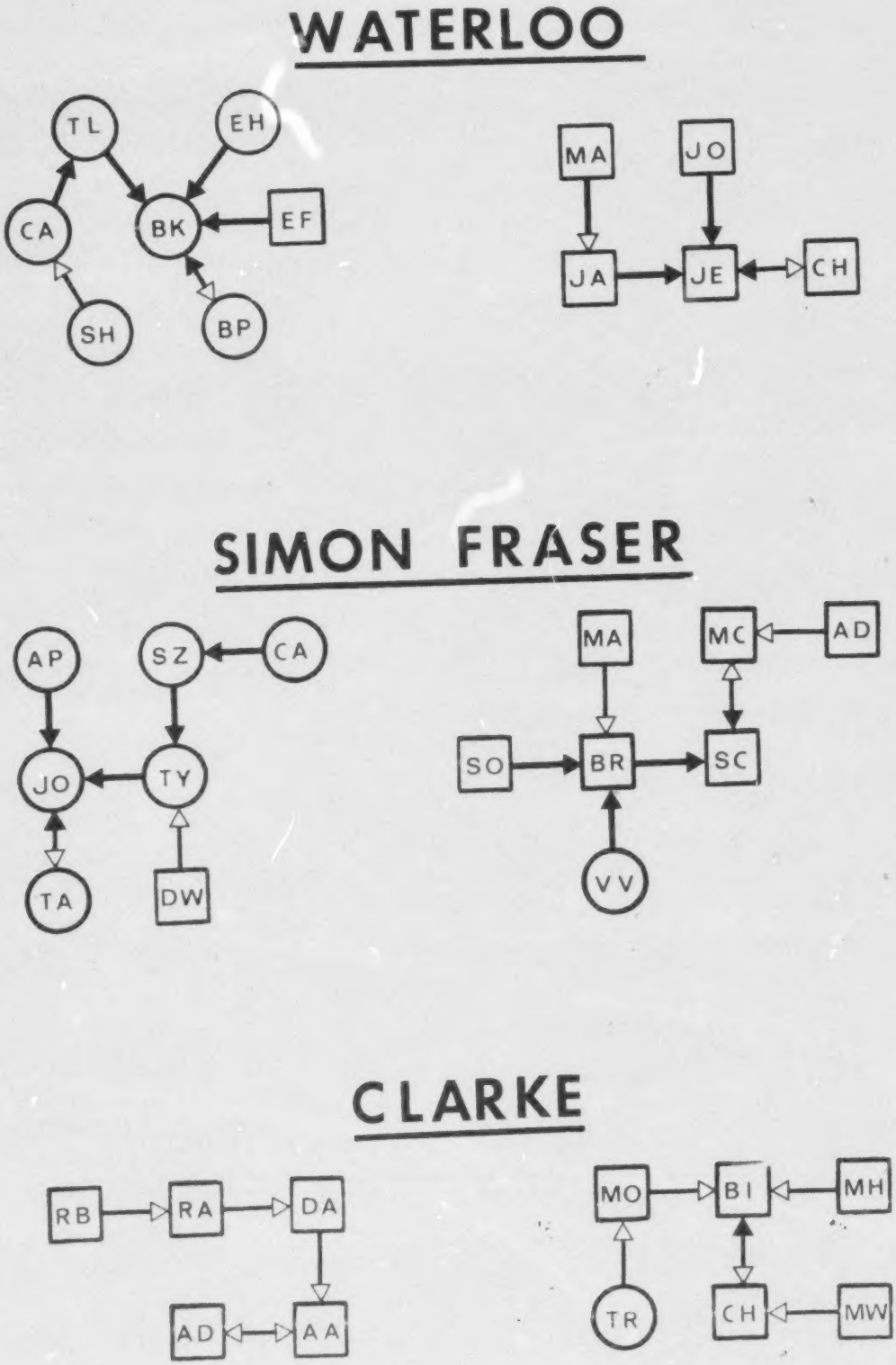
the Simon Fraser group. Affiliative preferences for this group were determined in the same manner, that is using the same categories of affiliation, as for the Waterloo and Clarke groups. However, the measures of altruism used in the Simon Fraser study were slightly different from those used for the Clarke and Waterloo groups, since activities were coded at the category, rather than action pattern level.

Figure 12 shows sociograms depicting the most preferred social targets for altruistic behavior in the Waterloo, Simon Fraser and Clarke groups. The solid arrows indicate that the target for altruistic behavior was also the most preferred target for affiliative behavior. The open arrows indicate that the preferred target for altruism was not consonant with the affiliative preference. The degree of correspondence between preferences for altruism and affiliation in the Waterloo group was 67%. Data available from the Simon Fraser group showed a similar degree of correspondence (64%). On the other hand, for the Clarke group, there was only a single example of correspondence between the targets chosen for affiliative and altruistic actions (correspondence was only 9%). The correspondence between target preferences for these two classes of activity in the normal groups suggests that altruistic behavior was directed toward those with whom the child was closely attached.

A second question which was examined in the present study concerned the possible relationship between dominance status and altruistic behavior in the Waterloo, Langara and Clarke groups. In

Figure 12

Altruism Networks at Three Preschool Centers



order to answer this question Rank-order correlation coefficients were computed between position in the dominance hierarchy and the amount of altruistic behavior initiated and received. In all groups there was no association between dominance status and rate of initiated altruism. However, there was a significant relationship between position in the dominance hierarchy and rate of receiving altruistic actions. This correlation was strongest within the Clarke group ($r_{rho} = .60$, $p < .05$) and also significant in both the Langara ($r_{rho} = .41$, $p < .05$) and Waterloo ($r_{rho} = .42$, $p < .05$) samples. Thus, altruistic behavior seemed to be not only directed toward those with whom the normal child was affiliated, but tended also to be directed toward those in the group who were more dominant. The latter finding suggests that altruistic behavior may be used to appease dominant individuals in the group, or perhaps to attempt to elicit behavior incompatible with agonism.

In summary, then, the prosocial behavior of the groups observed in this study was consistent with respect to the social specificity of normative altruism and with respect to the distribution of acts across the three classes of object-related, cooperative and helping activities. In contrast, the prosocial behavior observed in the atypical group was inconsistent with that observed in the normal groups in several ways. There was no evidence for social reciprocity or mutuality in altruistic activities at the Clarke. Also, there was evidence that prosocial behavior was not directed toward those with whom the Clarke children most often affiliated. These differences between the clinical and normal

groups in conjunction with the earlier differences reported on attachment bonds suggests that a problem for the atypical group may have been the development and stabilization of positive cohesive social bonds. Alternatively, these results may also reflect the behavioral inconsistency which occurs during early group formation.

With regard to the function of altruism in normal preschool social organization, the results of this preliminary research suggest that prosocial activities are directed toward those with whom the child is most closely affiliated as well as those who are ranked higher in the dominance hierarchy. Ultimately, the function of altruism in social organization may be found to lie in its signalling and regulating role in both dominance and affiliative social interactions. Future systematic exploration of these preliminary findings should perhaps focus on the possibility that altruism may mediate in this way between other classes of social behavior. For only by identifying how altruism functions in stable social groups will we begin to understand the way in which specific social mechanisms such as attachment and dominance regulate naturally occurring behavior of this type. Such understanding seems critical for a better appreciation of both the psychology and biology of reciprocal altruism.

# Differences in Play as a Function of Social Roles Within the Peer-Group

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The nature of early play and its function in normal development are topics which have had a recurrent interest for both developmental biologists and child psychologists. As early as 1896, Karl Groos in a book entitled "The Play of Animals" stressed that involvement in play during childhood provided essential preparation for the adult life of most animals. Groos argued that young animals supplement their hereditary endowment with individual experiences obtained during play, and thus, are better prepared for the tasks of adult life. Very similar ideas are reflected in Bruner's (1975) consideration of the adaptive value of immaturity which permits the acquisition of both physical and social skills through interaction with peers during frequent periods of free-play. Similarly, Dolhinow and Bishop (1972) assert that "probably more dominance interactions among juveniles (monkeys) arise from play than from any other type of activity". During free-play, young monkeys develop both personal skills and social relationships which they carry into adulthood. In all cases, free-play is hypothesized to have an important role in normal social development.

All of the various descriptions of preschool behaviour included in today's symposium are based upon direct observations of spontaneous

social activity during such free-play periods. Even though there is general agreement that free-play is an important context for development, the term itself actually doesn't seem to have a very precise meaning. Free-play is a loose, general description for a wide range of qualitatively different kinds of activities. These activities are grouped together because they occur with only minimal intervention or direction from adult supervisors of the peer-group. In this sense, the ethological observer usually persuades himself that his records of social behaviours during free-play provide an unbiased naturalistic account of young children's conduct in a free, rather than captive, or constrained setting. The extent to which the preschool setting provides a natural, semi-natural, or captive condition for the study of children's social behaviour is a question that can be debated, but probably not answered. But certainly, given the increasing sophistication of direct observation techniques that are being used in field research on preschool behaviour, much more careful attention should be given to adequately specifying the nature of play activities observed during such unstructured periods, and relating these forms of activity to other social information that is collected on the organization of the preschool peer-group.

The research I will report today makes an initial effort to relate the quality of play observed among young children to information already reported concerning their social relationships evident from observation of spontaneous social activities. The major purpose of

the research was to examine possible relationships between children's forms of play and their status or role in the social order of their peer-group.

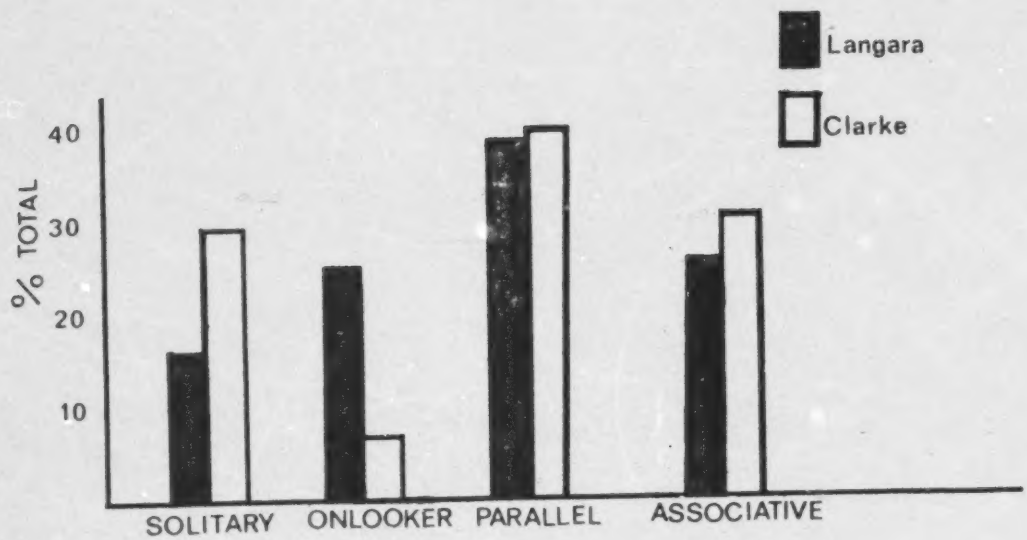
Our analysis of types of play entailed the use of a modified version of the Parten Play Scale (Parten, 1932). Four major categories of play were recorded. Solitary Play entailed instances where the child played alone with toys different from the children around him, and made no effort to get close to other children. Onlooker Play included watching other children play, perhaps talking to them, but not participating in their activities. Parallel Activity was coded when the child played independently, but the activity he chose brought him among other children. He played beside rather than with other children. Associative Play included instances where the child played with other children. Often there was sharing of toys. Usually all members of the play group engaged in similar activity, and often there was cooperation in a common task. All play data were collected following periods of direct observational sampling of ongoing social behaviour. Play records were obtained using instantaneous scan samples at regular intervals throughout a four week observational period. Data were available for two groups: (1) the Langara preschool sample which contained 17 normal children; and (2) the Clarke group which contained 11 children referred to the institute to participate in a summer program for the enhancement of social skills.

As is shown in Figure 13, all forms of play were evident in both preschool samples. Parallel and Associative play occurred with practically the same frequency in the normal and the atypical group. The major difference between the two groups was in the amount of solitary play and onlooker behaviour. The proportion of solitary play was significantly greater among members of the atypical group. In contrast, Onlooker behaviour was significantly more frequent in the normal group. Although unoccupied activity was not recorded separately at either preschool setting, children at the Clarke appeared to engage in this class of behaviour to a greater degree than children in the Langara sample. Thus, the relatively higher amount of solitary play observed at the Clarke may also reflect a greater amount of unoccupied activity.

In her analysis of young children's play, Parten divided her scale into two major classes. Pro-social Play consisted of cooperative, associative, and parallel activity; while Non-Social play was comprised of onlooker, solitary and unoccupied activity. Parten (1932) reported that older preschool children tend to engage in the more socially organized play. A comparison of social versus non-social play in the present data indicated no significant difference between the two samples, even though children at the Clarke were nearly two years older than the average child in the Langara group. Thus the present findings concerning the relative proportion of social play suggests that the Clarke children are probably functioning somewhat below the level that should be ex-

Figure 13

Distribution of Play for Two Preschool Groups



pected given their chronological age.

In order to examine the relation between social quality of play and a child's position within the dominance hierarchy, children from both samples were divided into High, Medium and Low Status categories. Figure 14 shows the mean proportion of play samples that were coded for these status categories in each group. Children who ranked high in dominance engaged in the more advanced forms of social play. This relationship was most clear among members of the Langara sample, where a linear trend in the proportion of social play as a function of status grouping was evident. For the Clarke group, High Status children also show a significantly greater tendency than medium status children to engage in the more social forms of play. However in the atypical group, the Low Status children also participated in more social play than middle ranking individuals.

A similar analysis was conducted to assess the relationship between amount of social play and the affiliative role of children within each group. For the Langara group subjects were assigned to either a focal, central or peripheral category depending upon the number of times they appeared as the "Nearest Neighbor" of other group members. Children at the Clarke were divided into similar groupings based upon the number of times each was chosen as a most preferred social target. Figure 15 shows the average amounts of social play which characterized children assigned to each of these categories. It is evident from this figure that there was little direct relationship between form of play

Figure 14

Percent of Prosocial Play as a Function

Dominance Status

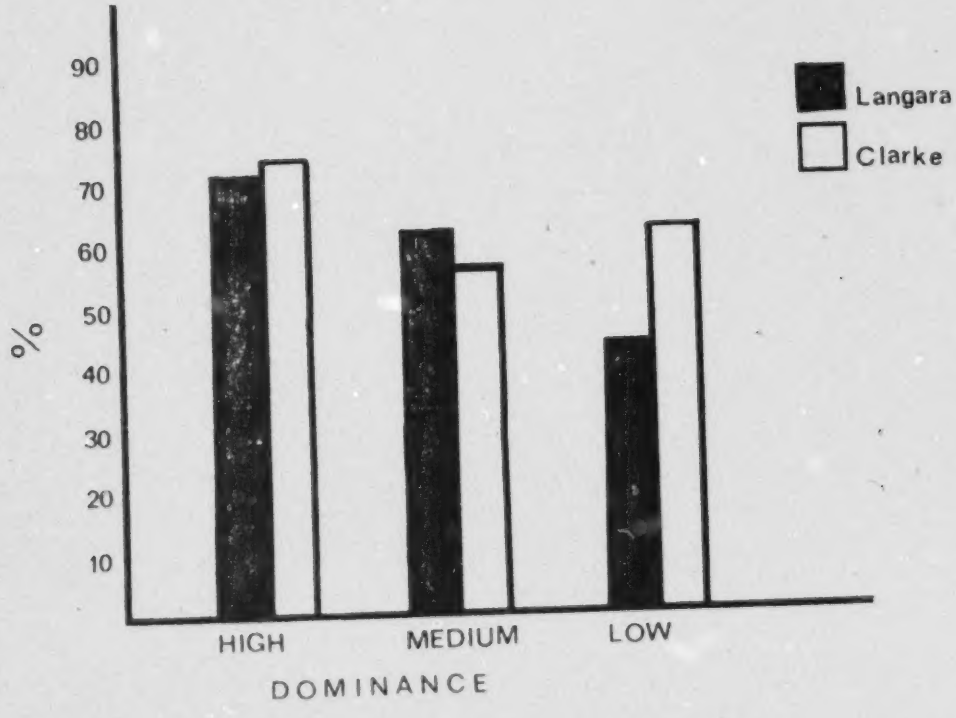
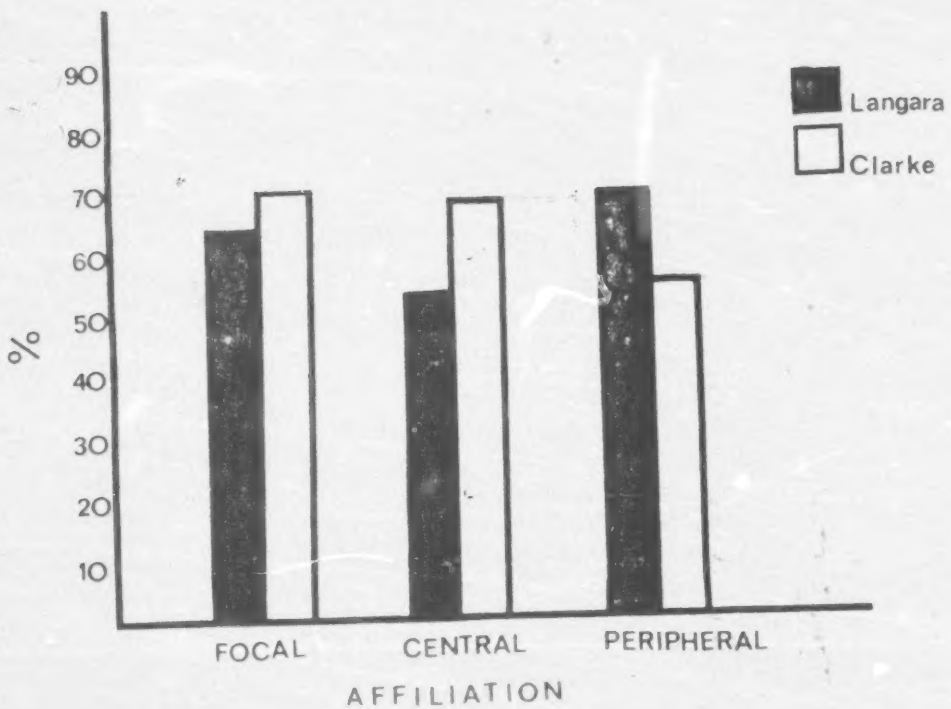


Figure 15

Percent of Prosocial Play as a Function of Affiliative Roles



and position within the affiliative network. Although some of the mean differences seem reasonable large, the degree of variability within each affiliative category was quite substantial, and none of the differences approached statistical significance. Finally, in order to determine whether entire affiliative networks might differentially engage more frequently in a particular type of play, average social play scores were computed for each affiliative subgroup in the Langara sample. Comparison of mean scores again failed to show any significant differences related to the affiliative bonds of the children.

The reported relationship between maturity of play and dominance status within the preschool group suggests that a child's position within the peer-group power structure may be directly related to his general level of social maturity, or acquired social skills. That High Status children should be slightly advanced in social maturity fits well with our impression that they seem to be better able to cope with a variety of social situations, and especially skilled at terminating aggressive conflict by failing to acknowledge threats or attacks by more subordinate group members. Furthermore, if high dominance status is correlated with leadership perogatives, as it is among many non-human primates, other children in the preschool group are probably more likely to orient and behaviourally accomodate to higher status peers. Such orientation and accomodation might result in more dominant children taking control of group activities, and setting the standards of appropriate activity especially during periods of unstructured play.

If the dominant child assumed such a role at a fairly regular rate, then he would be observed more frequently in both associative play and parallel play with peers while the lower status children would be observed more often in an onlooker role waiting for the high status child to exercise his leadership perogatives.

The lack of relationship between affiliative bonding and forms of play also has interesting implications. This finding suggests that ongoing play activities do not serve as a general criterion for attracting children to one affiliative network, rather than another. Since the affiliative subgroups did not differ in their general play activities, we must seek factors other than the quality of activity during free play to explain the stratification of the preschool peer-group into distinct affiliative networks.

# The Emergence of Social Structure in Normal and Clinical Groups of Unacquainted Children

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Peer groups can be differentiated into two categories based on their origin (Hartup, 1970). 'Ad hoc' groups consist of previously unacquainted individuals brought together for a specific purpose, and would clearly not occur spontaneously among non-human primate species. It has been assumed that the second category of informal or 'real' groups occur more or less frequently in the natural social ecology of most primates, although this view has recently been challenged. Konner (1975) stated that "The comparative perspective is that peer relations do not exist--not in the human environment of evolutionary adaptedness nor in the societies of animals most closely related to man" (p. 122). This viewpoint is supported by anthropological and primatological data that evidence the anomalous biological character of same-aged children's social groups. However, although evolution may have favored the selection of social mechanisms more appropriate to multiage groups, the same-age peer group is certainly part of the social reality within most of modern Western society, with the preschool as a

prime example. Although the majority of ethological studies to date have examined ongoing social interactions in such aggregations (e.g., Blurton Jones, 1967; 1972; McGrew, 1972; Smith and Connelly, 1972; Strayer and Strayer, 1976), there has been a comparative dearth of studies focusing on the formation of children's peer groups. The present research examines this topic by comparing the processes of group formation in normal and clinical groups of preschool children.

Comparative researchers have examined ad hoc group formation in several non-human primate species and have observed that interactions occurring within the first few hours after group formation are cricical in determining the future structure of the group (Bernstein and Mason, 1963; Hawkes, 1969). McGrew (1972; 1974; McGrew and McGrew, 1971) conducted one of the only previous studies of ad hoc peer group formation in young children. He found that children's responses to group formation differed considerably from the typical pattern in non-human primate groups. Whereas primate agonism generally peaks very soon after group formation, in McGrew's preschool group, agonism remained very low at the beginning and gradually increased throughout the seven day observation period. However McGrew's study focused only at the level of individual actions, and thus provided little information about the formation of social relationships and group structure. The present research attempts to describe changes during group formation at each level of analysis outlined in the introduction to the symposium.

## Method

Both agonistic and affiliative behaviours of two groups of preschool-aged children were recorded during the first four days of group formation. One group consisted of seven normal four-year-old children (4 females, 3 males; M = 4 years, 3 months, SD = 2.7 months). One girl dropped-out after the first two days leaving 3 girls and 3 boys. Since these unacquainted children were brought together only for this four-day period, they will be referred to as the 'Ad hoc' group. Members of this group played together for 2 1/2 hours on each of the 4 days in the observational period. All of the children's interactions were recorded on videotape using a Group Scan sampling technique (Altmann, 1974). The agonistic and affiliative interactions were coded using the general behavioural categories described earlier. Because of the relative infrequency of agonistic behaviour, all conflict episodes during the observational period were coded, whereas affiliative information was sampled periodically throughout the four days.

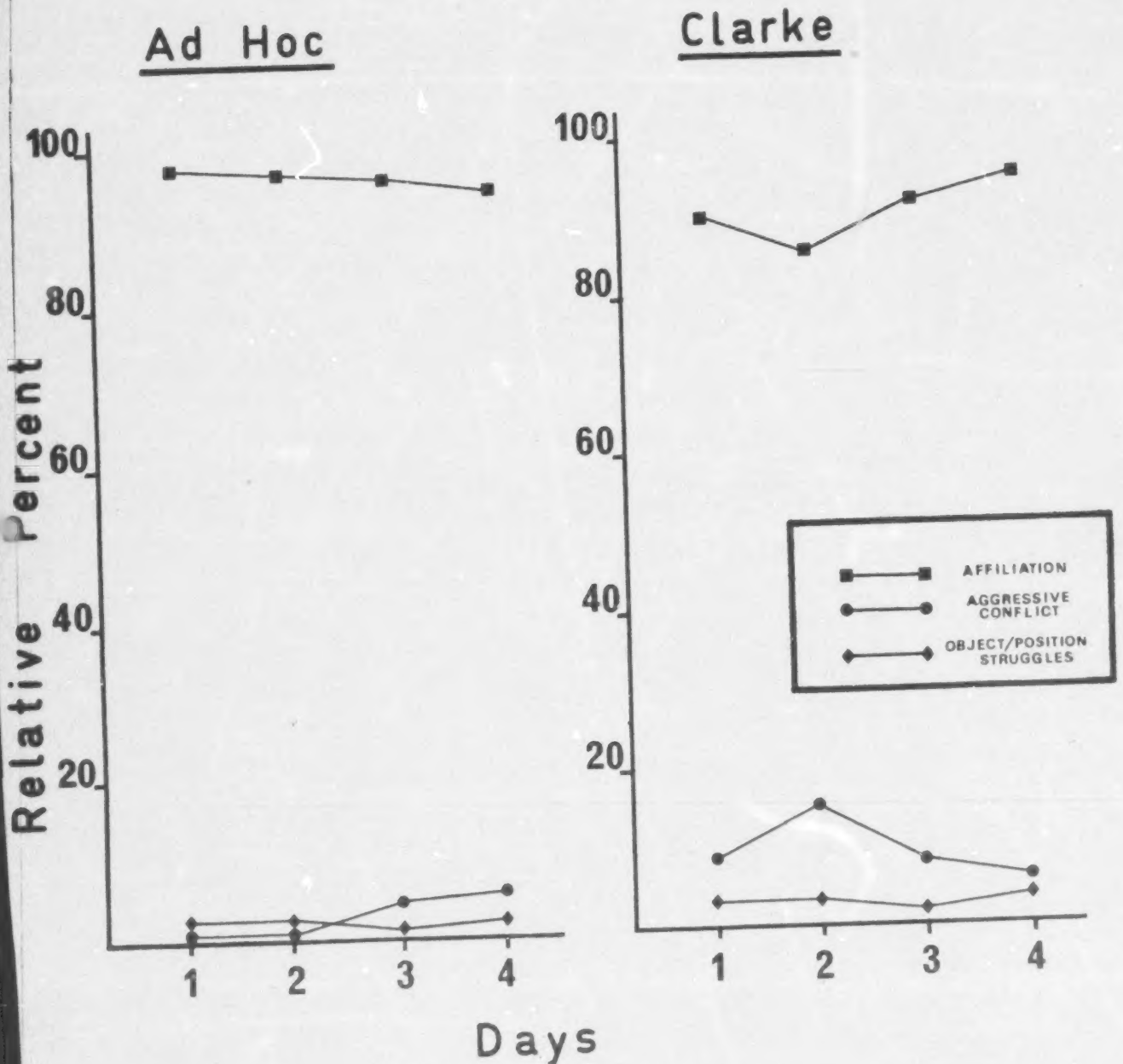
The comparison group consisted of 11 atypical children from the Clarke Institute described earlier. The Clarke group was nearly unisexual, with 10 boys and 1 girl, in contrast to the mixed-sex Ad Hoc group. The average age of the Clarke group was 6 years, 2 months (SD = 5.6 months). The Clarke data was gathered using a direct observation focal individual sample.

## Results and Discussion

Figure 16 shows the relative frequency of initiated affiliative behaviour as well as the proportion of the two categories of agonism during the first four days of group formation. Throughout the observational period agonistic behaviour accounted for only a small proportion of social interactions in both groups. However, there were marked between-group differences in the nature and temporal development of conflict. In the clinical group, Agressive Conflict accounted for a relatively high proportion of interactions on the first day, and then increased precipituously on the second day to nearly 13% of the total interactions. During the third and fourth days, there was a pronounced decrement in Aggressive Conflict, with these behaviours accounting for only about 5% of all interactions. In contrast, Aggressive Conflict in the Ad Hoc group rose steadily from the first day to a plateau of about 4% of the total on the third and fourth days of observation. The temporal pattern of changes in Aggressive Conflict in the Ad Hoc group was very similar to that described by(McGrew 1972; McGrew and McGrew, 1971) in a comparable study of group formation among English preschoolers. However, the changes in Aggressive Conflict as a function of days for the Clinical group was much more comparable to the pattern in newly-formed non-human primate groups (Bernstein and Mason, 1963; Hawkes, 1969). This between-group difference may reflect the differential composition of the two groups. However such composition effects could result from either the predominantly male nature

Figure 16

Relative Frequency of Classes of Social Behavior as a Function of Observational Days



of the Clinical group, or from the specific behavioural problems of the Clarke children. Both factors probably contribute to the observed difference between groups.

The proportion of Object/Position Conflict was very similar in both groups, accounting for about 2% of the total interactions throughout the observational period. In the Ad Hoc group, this means that there was more Object/Position than Aggressive Conflict on the first two days, with this relationship reversed on Days 3 and 4. In the Clinical group Aggressive Conflict accounted for a greater proportion of the total agonism throughout the observational period. However, the relative rate of Aggressive Conflict at the Clarke declined rapidly to the level observed in the Ad Hoc group by Day 4. This trend suggests that the observed difference in the nature Aggressive Conflict diminished as the groups stabilized, and that it is the initial phases of group formation that provide the most important distinctions in agonistic patterns between the two groups.

Although the relative proportion of agonistic and affiliative interactions in the group provides information concerning general social behaviour during group formation, it does not describe the development of dyadic relationships and group structure which constitute the emerging social ecology of each group. Figure 17 shows the dominance structures that were established after four days. In the Ad Hoc group, dominance relationships were established in 12 of 21 possible dyads. The resulting dominance structure was 95% rigid and 92% linear.

Figure 17

Dominance Hierarchies for First

Four Days of Group Experience

## Ad Hoc

TARGETS

| INITIATORS | Tr | Ty | Da | Am | Ca | Va | No | TOT. |
|---|---|---|---|---|---|---|---|---|
| Tr | | 1• | 9 | 2 | | | 38 | 50 |
| Ty | 1• | | 5 | 1 | ◆ | | 2 | 9 |
| Da | 1 | 1 | | • | | 1 | 22 | 25 |
| Am | | | • | | 1 | | 4 | 5 |
| Ca | | 1◆ | | | | • | • | 1 |
| Va | | | | | • | | • | |
| No | | | 2 | | • | • | | 2 |
| TOT. | 2 | 3 | 16 | 3 | 1 | 1 | 66 | 92 |

## Clarke

TARGETS

| INITIATORS | Aa | Mh | Mo | Bi | Ad | Rc | Ro | Ch | Mw | Tr | Da | TOT. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Aa | | • | 1 | 2 | 3 | 1 | | 1 | | 2 | | 10 |
| Mh | • | | • | 1 | | | | | | 2 | | 3 |
| Mo | | • | | 1 | 1 | | 1 | 1 | | | 1 | 5 |
| Bi | | | | | 2 | | | | | | | 4 |
| Ad | | | | | | 1 | | | | 2 | | 1 |
| Rc | | | | | | | • | • | | | | 0 |
| Ro | | | | | | • | | • | 1 | | | 1 |
| Ch | | | | | | • | • | | • | • | • | 0 |
| Mw | | | | | | | | • | | • | • | 0 |
| Tr | | | | | | | | • | • | | • | 0 |
| Da | | | | | | | | • | • | • | | 0 |
| TOT. | 0 | 0 | 1 | 4 | 6 | 2 | 1 | 2 | 1 | 6 | 1 | 24 |

Dominance position was unrelated to gender, and one boy had almost 3/4 of the Attacks and Threats in the group directed at him. The Clinical group dominance structure during the first week of observation was completely rigid and linear. In this respect, relations in the Clarke group again resembled those in non-human primate groups (e.g., Macaca nemestrina, Strayer, 1976) more than other reported children's groups.

In order to compare the rate at which dominance relationships were established, the percentage of dyads where dominance relationships were apparent was calculated for each observational day (see Figure 18). Seventy-five percent of the dominance relationships in the Clinical group were evident by the second day, compared to only 30% in the Ad Hoc group. This pattern is at least partly attributable to the fact that agonism in the Clinical group peaked much sooner, but also suggests that dominance might play a more important role in the early development of social organization of Clinical group.

The groups' affiliative structures during the first four days of group formation showed fewer differences than the agonistic organizations although some incongruities were still apparent (see Figure 19). The Ad Hoc group formed unisexual affiliative subgroups, with one reciprocal first choice dyad in each subgroup. This structure is identical to those reported earlier for other stabilized preschool groups. The Clinical group did not exhibit distinct subgroups during the first week of observation, and only one reciprocal dyad emerged; fewer

Figure 18

The Formation of Dyadic Dominance Relations

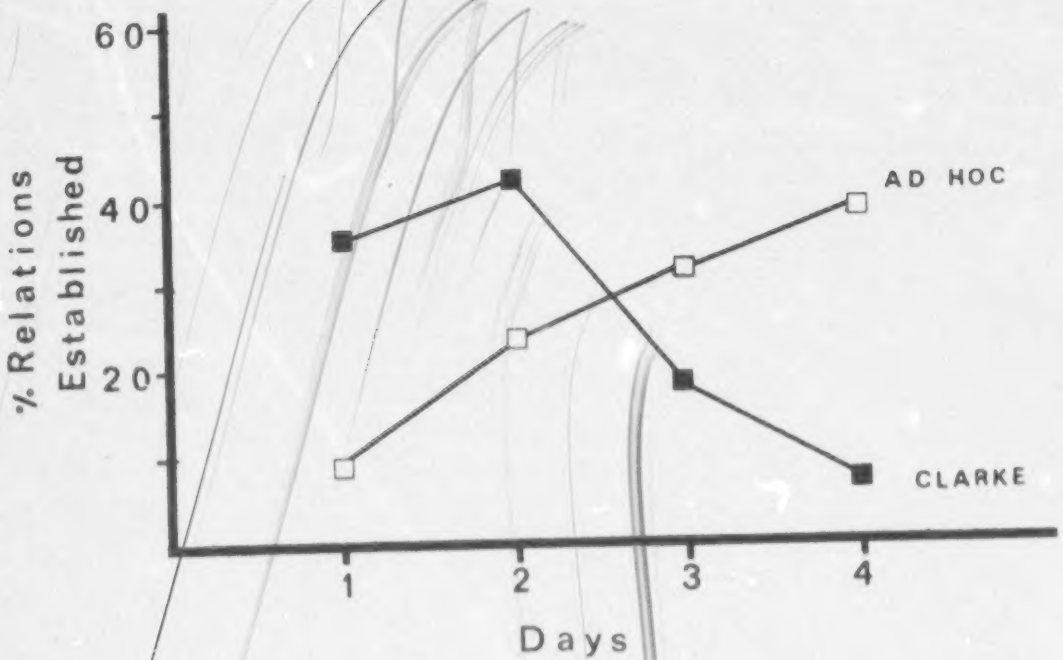
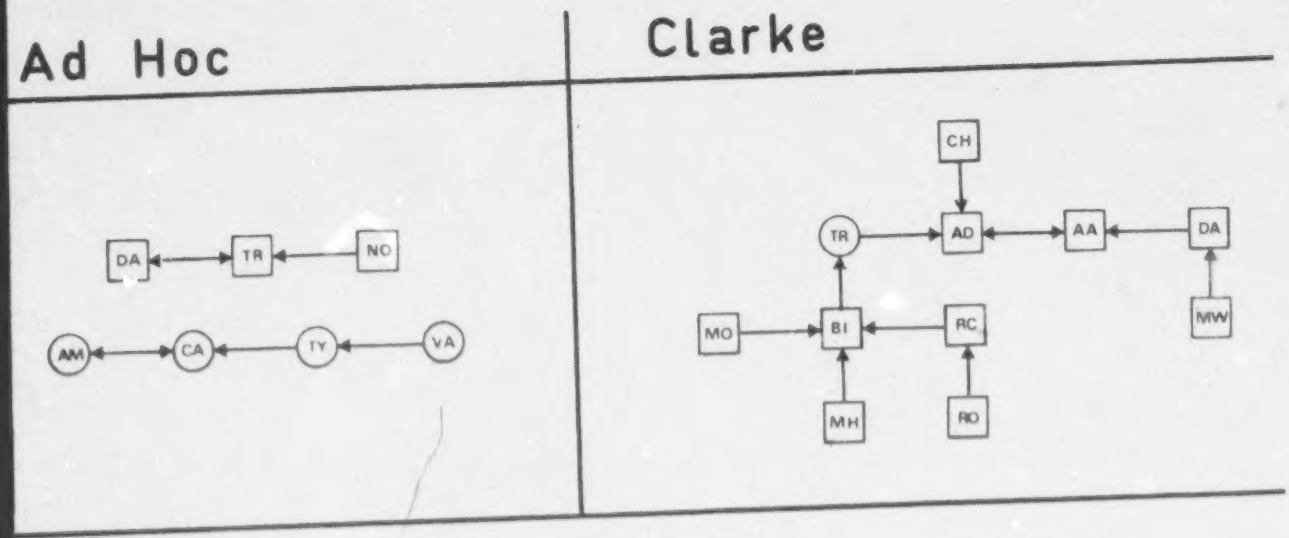


Figure 19

Affiliative Networks for First

Four Days of Group Experience



than is typical of a normal group of this size (e.g., Abramovitch and Strayer, 1976). Again, this absence of expected affiliative subgroupings could be due to either the all male nature of the group, or to a possible deficit in social competence among individuals in the Clinical group.

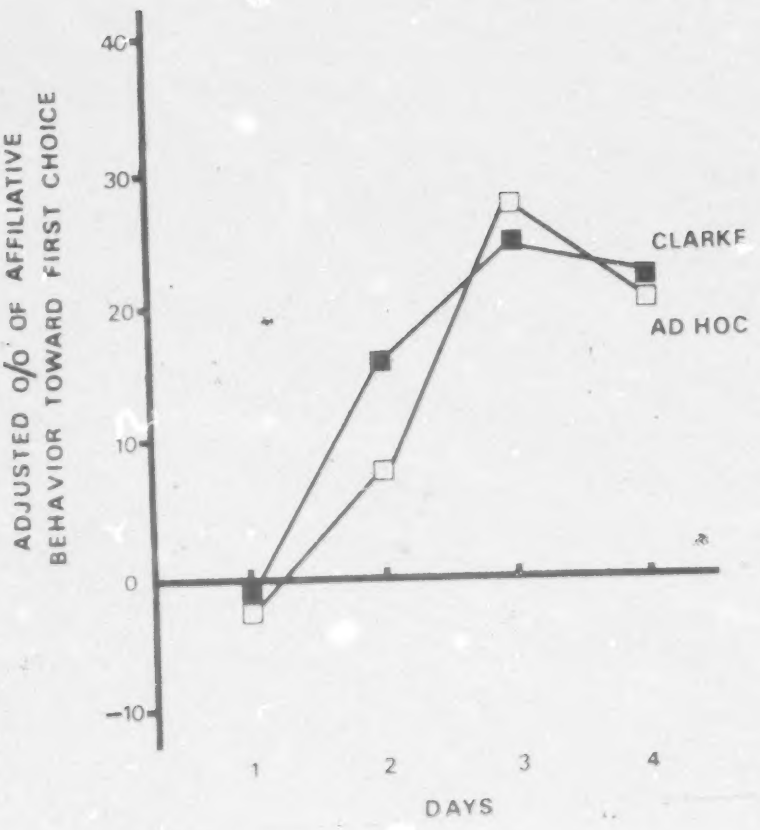
The rate at which the children became more socially specific in their initiated affiliative interactions was measured by calculating the percentage of behaviours directed by each child toward his affiliative first choice each day. When this figure was adjusted to compensate for the different group sizes (see Figure 20), the trend toward greater social specificity as a function of observation days was similar in both groups. The percentage rose steadily and appeared to stabilize on Days 3 and 4, when each child directed an average of 35% more affiliative behaviour toward his most preferred social target than would be expected on a chance basis.

Before ending I would like to commend briefly on the formation of affiliative networks within the Ad Hoc group. During the course of observations there was a marked decrease in between-subgroup Approaches, Contacts and Postural Signals. This change was accompanied by a corresponding increase in these activities between members of the same subgroups. Such developments reflect the gradual emergence of the two distinct affiliative networks, which were clearly evident to even casual observers by Day 3. However the fourth category of affiliative activity, Social Orientations, did not follow this trend. Social

Figure 20

Social Specificity of Affiliative

Behaviors as a Function of Group Experience



Orientations between subgroups increased during the course of observations, peaking on Day 3 and declining slightly on Day 4. These results suggest Social Orientations might function differently than other forms of affiliative expression, especially during the process of group formation. As relationships are being established in the group, visual monitoring obviously must play an important role in obtaining information about developing social relations among other group members. Such an interpretation seems especially relevant to a child's understanding of group dominance relations. In the present group, between-subgroup Social Orientations peaked in conjunction with the rise in Aggressive Conflict. The majority of this conflict took place within the male subgroup, while the major portion of the between-subgroup Social Orientations were directed toward these boys. That the function of Social Orientation would vary with ecological and temporal parameters fits with an 'attentional structures' model of primate social organization advanced by Chance and Jolly (1970). If, as suggested, Social Orientations serve both a monitoring as well as an expressive function, it seems necessary in future research to attempt to distinguish between these two activities, by either attending more closely to the context of the behaviour or by distinguishing fine differences in the topography of the visual orientation response.

In summary, agonism in the Clinical group followed more typically non-human primate directions in the rapid onset of conflict as well as the rigidity of dominance structures. The Ad Hoc group also developed

linear dominance structures, but at a much slower rate than the Clinical group. The Clinical children showed less evidence of affiliative reciprocity than members of the Ad Hoc group, although the rate of increase in social specificity of affiliative behaviour was similar acros both groups. Although these between-group differences are provocative, especially given the particular problems of the children in the clinical sample, it seems necessary to stress that research on the process of group formation has only just begun. These reported trends must be interpreted with some caution since with the present report the process of group formation has been examined from an ethological perspective in only three children's peer groups. Further research in this area should be carried out in order to examine the generalizability of the present observations.

# The Development and Stabilization of Social Interaction in a Clinical Peer-Group

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From a biological perspective, group formation of previously unacquainted individuals appears to be a uniquely human phenomenon. While preliminary investigations of changes in rates of individual action during the process of group formation are available (McGrew, 1972; McGrew & McGrew, 1971), detailed behavioral analyses of similar changes in social interaction are lacking. Furthermore, the emphasis placed in earlier reports on social activity only within the first week of group exposure precludes distinctions between the processes of group formation and group stabilization. The present study was designed to examine changes over a four week period in two classes of social activity among members in a newly formed clinical peer-group. Primary objectives of the research included: (1) assessing normative forms of interaction within various periods of the stabilization process; (2) determining the amount of time required for stabilization of social relationships; and (3) examining the emergence and stabilization of affiliative and agonistic social structures.

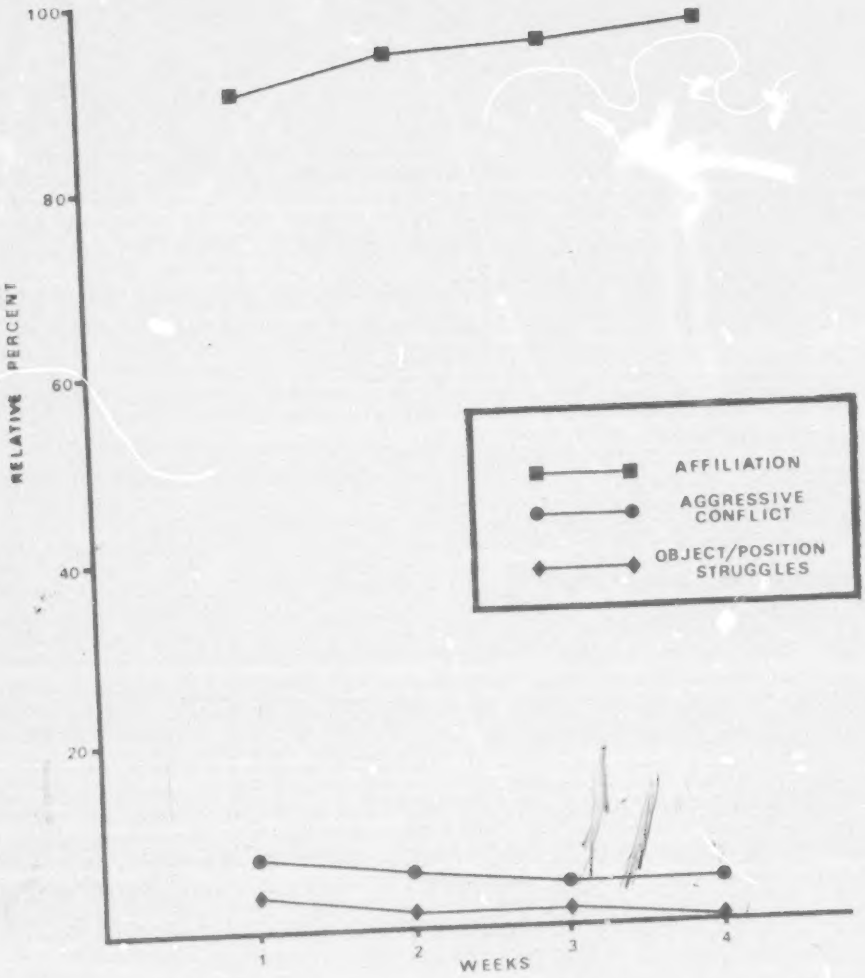
Our interest in normative forms of interaction entailed examining weekly changes in the relative frequency of both agonistic and

affiliative behavior, as well as changes in the responsiveness of the social target to these forms of initiated activity. Figure 21 represents changes during the observation period in the relative frequency of both agonism and affiliation. The class of agonistic activity is subdivided into two categories - Aggressive Conflict and Object/Position Struggles. By far the most striking result in this Figure is the large discrepancy between the relative rate of affiliation and agonism. Affiliative overtures exceeded agonistic initiations by an average ratio of nearly nine to one. This ratio was fairly stable during each of the observation weeks. Within class comparisons showed that the relative frequency of initiated agonism was highest in Week 1 and declined gradually over the observation period. In contrast, the relative frequency of affiliation showed a gradual increase over the four weeks. As mentioned previously, this finding reflects a fairly typical non-human primate pattern of response to group formation where the frequency of agonistic activity has been reported to reach a peak during the initial stages of formation. This initial increase is usually followed by a sharp reduction in aggressive activity and a corresponding rise in affiliative behavior.

Although the relative rate of initiated activity showed a high degree of stability throughout the observation period, there were systematic changes in responsiveness to some social initiations as a function of group experience. Week-by-week analyses of affiliative interaction showed a sharp decrease in the relative rate of No Response

Figure 21

Relative Frequency of Classes of Social Behavior as a Function of Observation Weeks



to affiliative overtures. Thus, it seemed that after an initial period of hesitation, children were more likely to reciprocate initiated affiliative activity. In marked contrast, the relative rate of No Response to initiated agonism remained fairly constant. These findings reinforce the above conclusion that more cohesive interaction increased following the initial period of agonistic exchanges between group members during the first week of group formation.

Although the relative frequency of both classes of behavior remained fairly stable throughout the four weeks of observation, the emergence and stabilization of agonistic and affiliative relations differed substantially. Figure 22 represents the week-by-week emergence of the dyadic dominance structure at the Clarke. The top matrix in Figure 22 shows the dominance hierarchy obtained during six weeks of observation. This structure was described earlier in the first presentation of the symposium. The four matrices below show cumulative changes in dominance interactions as a function of the four-week stabilization period. The increasing number of filled cells in these latter matrices reflect the increasing number of dyads which have worked out or established dominance relations. Over 40% of these dominance relations were established during the first week of observation. All but two of these dyads continued with the same asymmetrical relationship throughout the entire sampling period. By the end of the second week, over 60% of the social dyads had resolved their power relations.

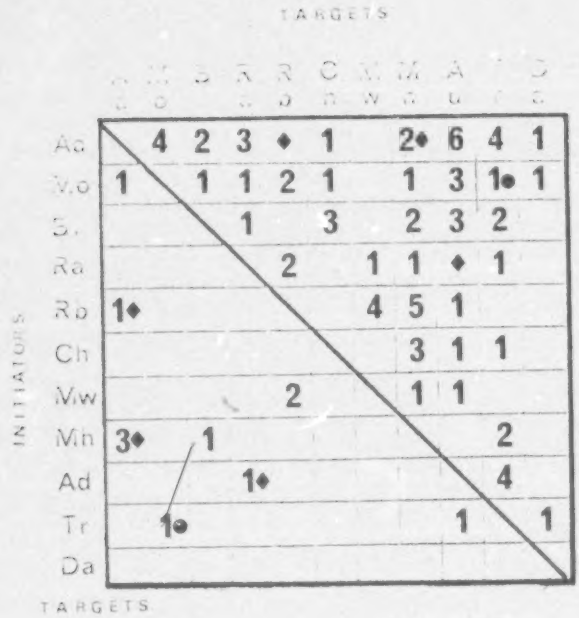
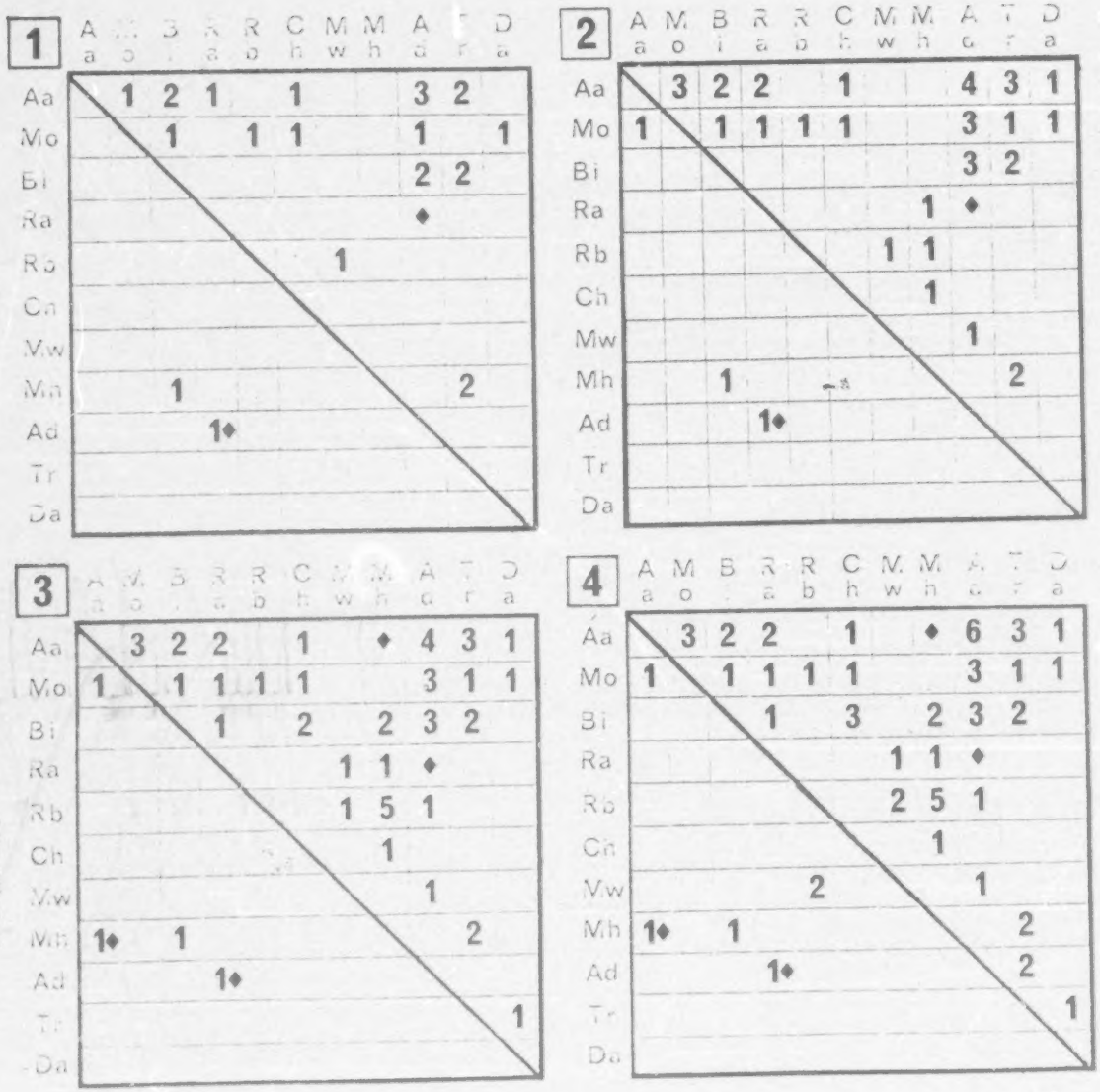



Figure 22

Weekly Changes in Dominance Relations for the Clarke Group



Unlike the rapid emergence and stabilization that was evident in Clarke power relations, weekly affiliative relations appeared to be in a constant state of flux. Sociograms based upon first preference for each observational week revealed little other than changing peer attachments and unstable affiliative networks. On average, only 12% of first preferences chosen one week were evident in the following week; none of these preferences were stable beyond a two-week period. Consequently, there was little evidence for stability of Clarke affiliative relationships during the four-week observation period.

To assess whether the differences apparent in the stabilization of affiliative and dominance relations were also evident at the structural level, comparisons were made between weekly structures and those derived from total assessments. For dominance relations, separate status rankings were constructed for each week of observation and compared with the total ranking obtained from six weeks of observation. Consecutive weekly correlations between these rankings ranged from .68 to 1.00 (rho's = .68, .87, 1.00) indicating a high degree of structural stability across weeks. Slight differences in weekly rankings were apparent only the first two weeks of observation.

The assessment of structural stability of affiliative relations entailed comparing weekly preference patterns with those derived from the total affiliative sociogram reported earlier in the symposium. To provide estimates of whether observed variation in weekly preference patterns at the Clarke fell within the range of variation typical of

stable groups, stability estimates of affiliative relations obtained for each observation week at the Clarke were compared with those obtained over a similar time period in an established group.

Figure 23 shows weekly change in peer preferences during a four-week observation period within the Simon Fraser group. Weekly stability estimates were derived from the percentage of choices which agreed with the preferences obtained from the total assessment (shown here at the top of the slide). Since it was often difficult to numerically differentiate first and second dyadic preference during a single week of observation, the top two choices in each week were compared with the overall preference from the total sociogram. Thus in a given week, if SO was either a first or second choice of MA, that preference was counted as an agreement with the total assessment. While some weekly variability is evident in the Simon Fraser group, an average of 75% of the weekly preferences agreed with the preferences derived from the total assessment.

The same analysis was conducted to assess the weekly stability of the total Clarke affiliative structure (see Figure 24). Unlike the Simon Fraser group, where a high percentage of stable preferences was observed each week, the Clarke group showed a relatively low percentage of stable preferences during Weeks 1 and 2 (36% and 55% respectively). This percentage increased to 73% by Week 4, a figure falling well within the Simon Fraser range of variability.

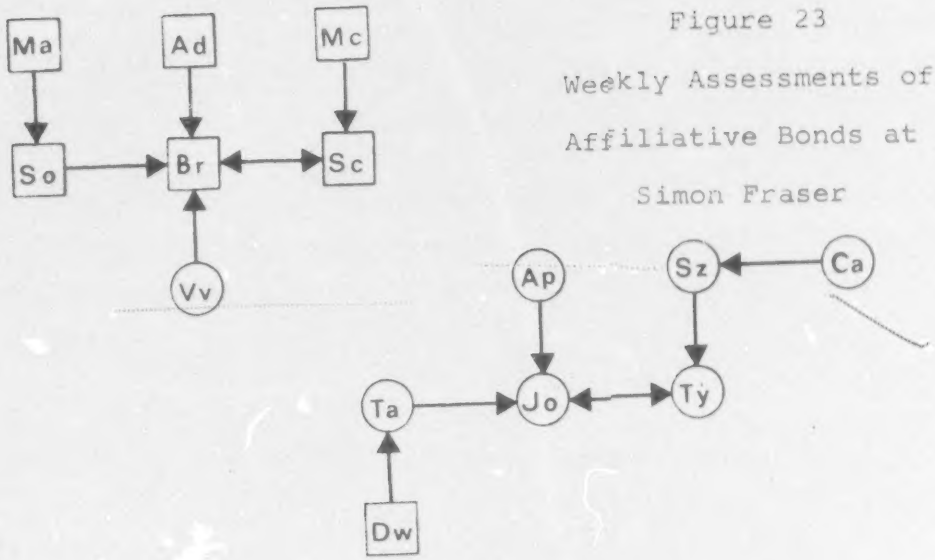



Figure 23

Weekly Assessments of

Affiliative Bonds at

Simon Fraser

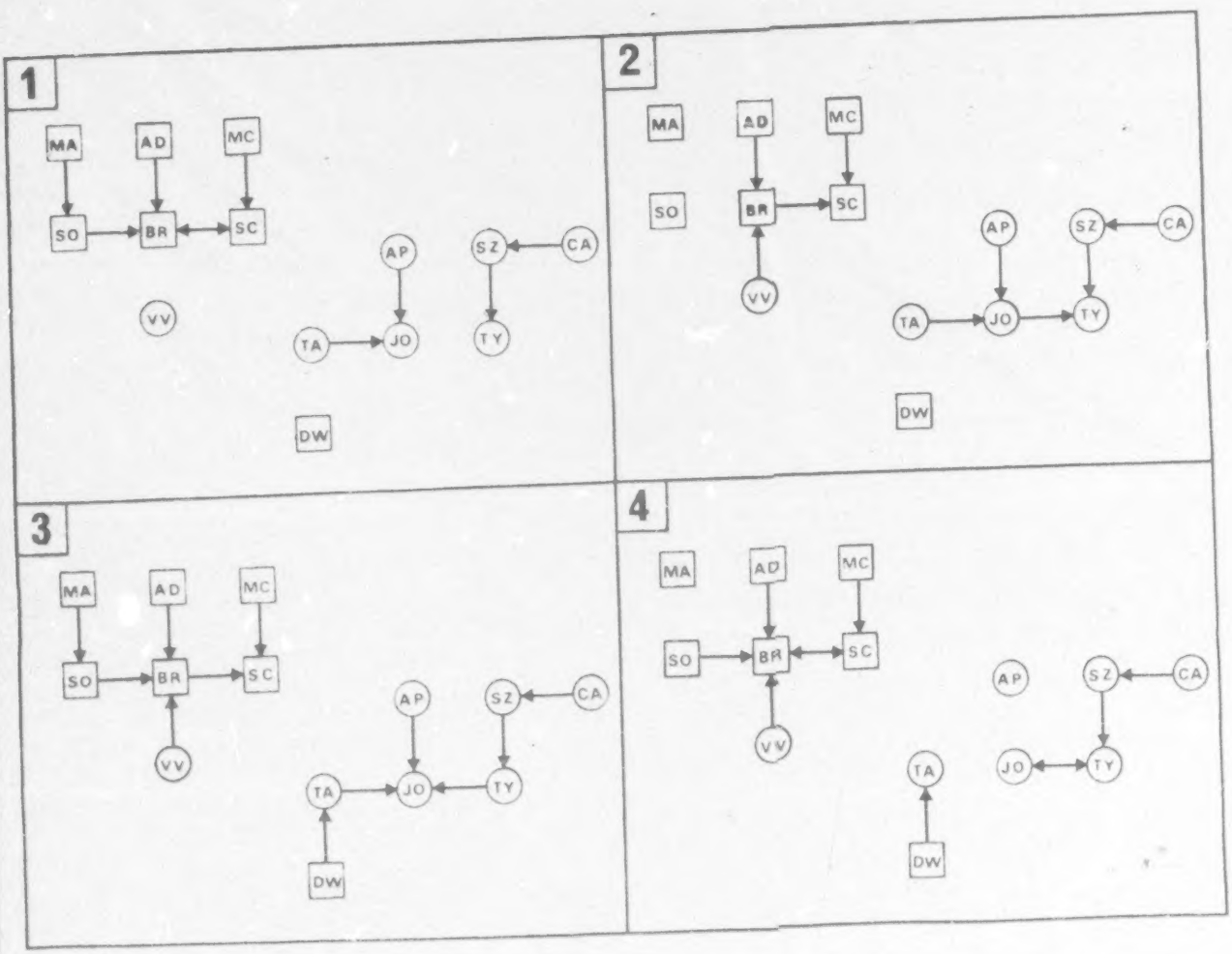
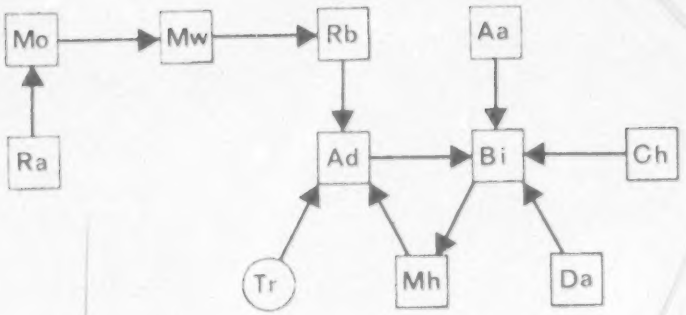
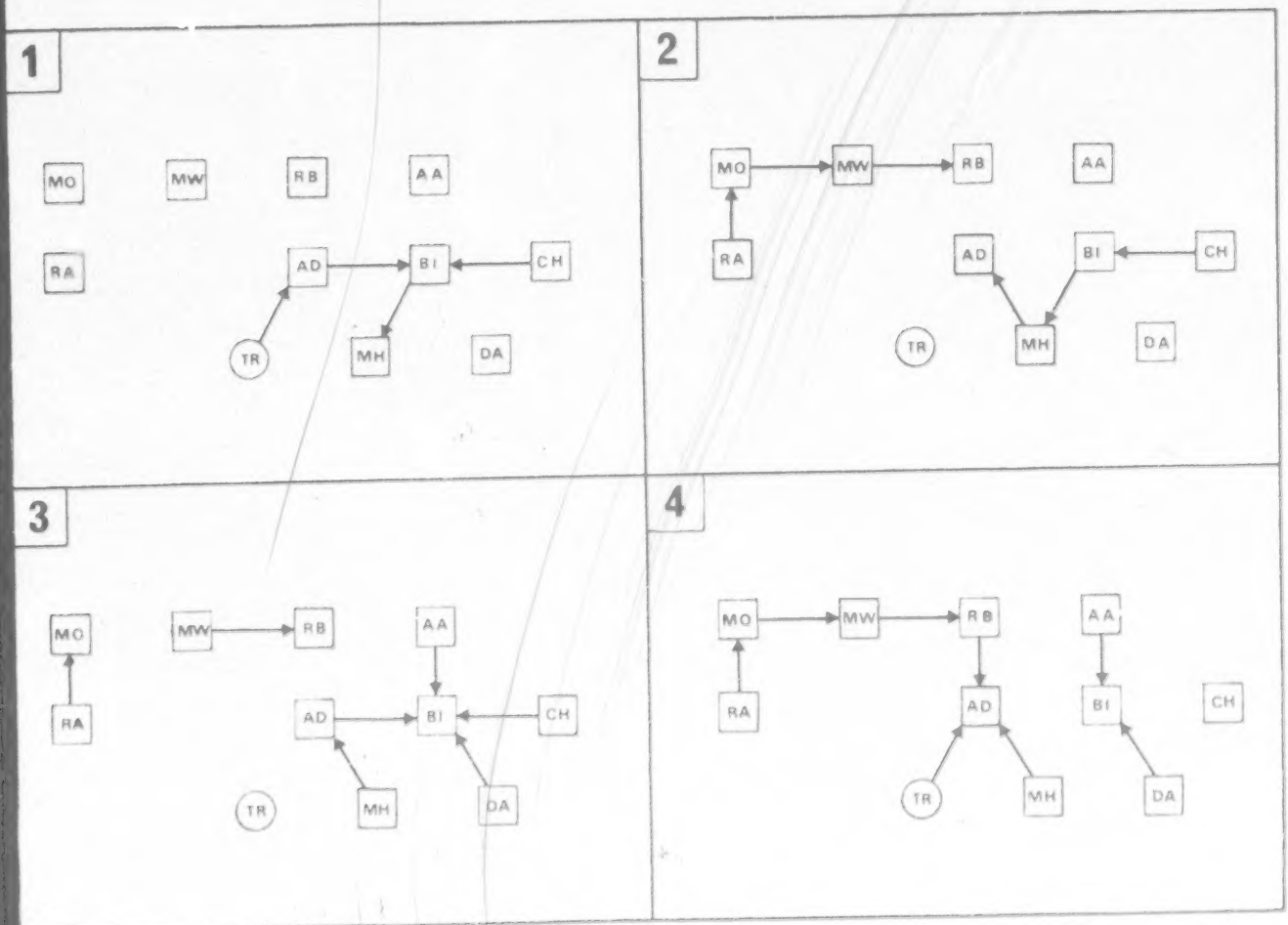


Figure 24

Weekly Assessments of Affiliative Bonds at the Clarke



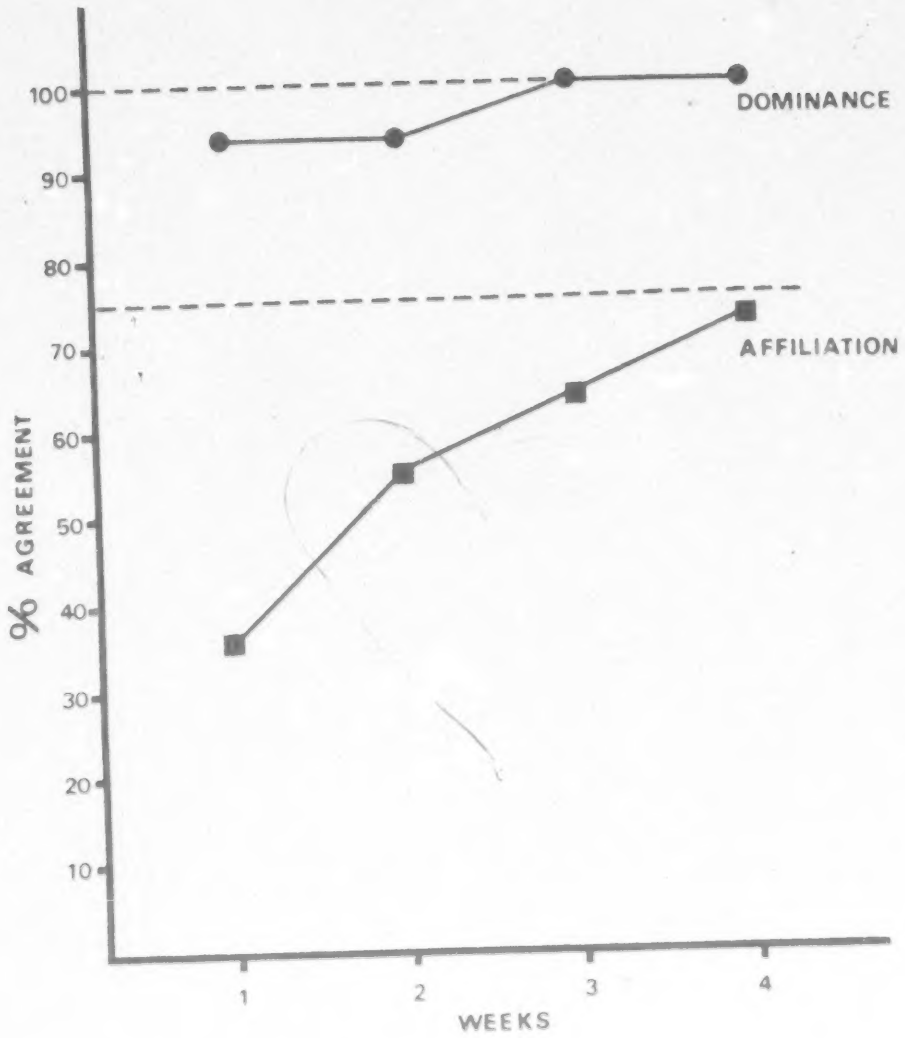
The stabilization of both dominance and affiliation is summarized in Figure 25, which shows changes in the degree of agreement between weekly structures and the total assessments. The broken lines in this figure represent empirically derived estimates of structural stability for each class of activity. These estimates were obtained from observations of weekly changes in social relations among members in normal, stabilized preschool groups. It is quite clear in this slide that while the two forms of social relations stabilized at different rates, by the end of the fourth week both forms had reached a normal level of stability. Stabilization of the dominance structure was fairly rapid, reaching its maximum level by the end of the second week. In marked contrast, the stabilization rate of the affiliative network was slow and relatively constant, approaching the expected level of stability only by the end of the fourth week.

From the preceding analyses, stabilization can be conceptualized as a process influencing all levels of social exchange - actions, interactions, relations and structure. Moreover, the present results suggest a temporal sequencing of stabilization at each level of social organization. Social actions and interactions reach equilibrium early in the group formation period, followed by stabilization in the relational and structural levels. Perhaps a more important contribution in the present research is the demonstration of differential rates by which the major classes of behavior attain relational and structural stability. These differences in the rate of stabilization of social

Figure 25

Comparison of Weekly Relations

with Total Assessment of Social Organization



activity may have contributed to the observed differences between the Clarke and the other normal preschool groups. Although the total dominance structure for the Clarke group did not differ in linearity or rigidity when compared to the other preschool power structures, there was some indication that dyadic dominance relations were established more rapidly among the atypical children. Furthermore, the relatively slower rate of affiliative stabilization in the Clarke group resulted in the emergence of an affiliative social structure unlike that found in any other peer group. Finally, it seems possible that the reported differences in altruism may also be related to the process of group stabilization. If we hypothesize that this third class of activity is the last to show stable trends following formation of the new group, then the lower social specificity of altruism, its lack of reciprocity, and absence of correspondence with affiliative choices may be understood in terms of differential rates of stabilization for these three major classes of social behavior. This suggestion implies that there is a sequential pattern to the stabilization of different classes of social activity. Whether this same order or sequence would be true of normal as well as atypical groups is an empirical question which should be investigated. However, it seems possible that the rate of social stabilization in the Clarke group may in fact be just another reflection of these children's difficulty in establishing and maintaining stable and cohesive bonds. Furthermore, it is not unreasonable to speculate that with continued exposure to the socially

unstable peer-groups within the clinical milieu, these "problem" children may become even less capable of establishing and maintaining cohesive peer bonds. Obviously, these issues require additional observational research using a variety of different groups brought together under different conditions.

From the present ethological perspective, more refined analyses of the effects of peer-group ecology on individual adaptation seem necessary for a better understanding of social development. Hopefully, such understanding should facilitate the development of more valid techniques for the assessment and remediation of the supposedly "clinical" problem child.

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# Discussion of Ethological Perspectives On Child Development

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Ethological perspectives are enriching child development research in many ways, but nowhere more significantly than in the study of group relations. To me, the most valuable outcome of these changed perspectives is an increased emphasis on adaptation in research on children's social behavior. For too long, research workers have been content to describe the social activity of the child with the aim of understanding only those processes that govern short term behavior change and maintenance. Compelling questions are now being raised that have less to do with the "hows" of the socialization process than with the "whys" -- with the role of particular social experiences, particular social relationships, and particular social contexts in both the development of the individual and the evolution of the species. The Montreal Group are to be commended for their contributions to this change in perspective.

Deriving from the new interest in social adaptation is the argument that naturalism in the research context is the only avenue to the truth. No one will hear me question the logic of this position. But the naturalist, basing his work in the literature of animal behavior,

should not conclude that this is a new argument in child development research. Naturalism has a long and venerable history in our literature and the need is not - as is sometimes implied - to stand our methodology on its ear. The methodological contributions of modern ethology will be much more modest than its theoretical contribution to child development. Few of our modern observational strategies and/or technologies were not anticipated years ago in the anals of the Teachers College Monograph series, the Iowa Studies in Child Welfare, and the publications of this Society. The work of the Strayers and their colleagues illustrate the best in contemporary observational methodology but their techniques are not destined to be their major contribution to child development research.

In their current work, this group has assayed a problem in group dynamics that has interested relatively few students of child development: the problem of group structures -- their forms, functions, and emergence. Deserving special mention are: a) the demonstration by these investigators that stable structures based on power relations are visible in groups composed of very young children; b) the assessment of structures based on affiliation and altruistic activity as well as dominance interactions; and c) the strong presumption that underlying all of these structures is social "g" (sometimes called social competence). Enunciated most clearly by Ms. Riusech and Ms. Harris, but foreshadowed in Janet Strayer's presentation, is the emergent hypothesis that attention structures, hierarchization, and role differentiation

are based on individual differences in effectance, broadly rather than narrowly defined. This is not a new idea, though, and I would urge these investigators to tie their work to long-recognized studies in the social psychological literature dealing with the bases of group structures -- e.g., the Michigan studies of Lippitt, Zander and their colleagues (e.g., Lippitt, et al, 1952) that were focused on middle childhood but more cogently the work of Muzafer Sherif and Carolyn Sherif (Sherif, et al, 1961; Sherif & Sherif, 1964) that deals directly with effectance and its role in the structuring of adolescent peer groups. I believe that the results of the Strayers and their colleagues will fit nicely with the older work, and I wish an integrative discussion had been included in these presentations.

Another major contribution of these investigators is the material they have presented dealing with temporal integration in group relations. Too many investigators study social activity -- both its forms and functions -- in static terms. To do so is to ignore one of the most basic considerations about group life -- its dynamic nature. Again, the Sherifs (and maybe one or two others) have anticipated our Montreal colleagues, and the earlier work could have been used as a foundation for the present effort. Temporal integration in the initial stages of group formation is a most intricate process. That hierarchical structures based on dominance episodes emerge in the first four days or the first four weeks in groups of preschool children is interesting, but the process needs elaboration. We know something about

end-anchoring and other phenomena associated with the emergence of these structures already (again from the Sherifs). Do the same things happen here? And what else?

Probably the most provocative material in the two temporal integration papers has to do with the **order** in which various types of structuring occurred -- dominance hierarchies first, affiliative structures next, and altruistic structures even later. Thus far, of course, it is not possible to argue that this sequencing is a general characteristic of group formation. The N is 1, and an atypical 1 at that. The preschool group on which both Smith and Harris based their papers was composed of "immature" children and included 10 boys and only one girl -- a group that might well be expected to coalesce early along the dominance dimension. But the hypothesis that dominance, affiliation, and altruism "clock-in" at different times in the initial stages of group relations is an intriguing one.

Now, a word about group differences. Anyone interested in human social activity simply must be concerned with differences in structures across groups as well as with similarities. To stress the plasticity of human social behavior is to stress a commonplace, but animal behaviorists sometimes seem overly eager to search only for invariant behavioral analogues across species. Such analogues -- even when found at the structural level -- don't really tell us very much. We are not going to find many comparative invariants in the structural aspects of human group relations because even those we successfully

isolate are highly variable across groups. For example, strong dyadic affiliations don't exist in some groups. This is well known, and these studies show the same thing. Thus, a pressing question concerns why such affiliations exist in some group structures but not in others. Other questions: Why are there differences in the functioning of altruism in these groups? Why were the dominance hierarchies more rigid and more linear in some instances than others? And what characteristics of the individual children and the setting in which they function determine the between-groups differences in structure and organization? The type of questions asked here most clearly by Susan Wareing - but also by Riusech - should be encouraged.

To answer these questions, of course, we need large amounts of data -- far more than the data assembled in these studies. The N covered by these reports is 5 - no more and no less - and it matters not how many hundreds or thousands of behavioral units we have studied in these groups, our generalizations about structure and about temporal integration (in contrast to the generalizations that can be made about interrelations among behavioral units) are limited to an N of that size. So this is a promising beginning, but a beginning only.

These studies contain much data on interrelations among behavioral categories some of which is reminiscent of earlier results: a) the pervasive influence of gender in groups structures has been reported over and over again from the 1930s through the 1960s (Challman, 1932; Hartup & Charlesworth, 1967); b) the lack of correlation between

affiliation and dominance at the level of individual behavior (Hartup, Glazer, & Charlesworth, 1967); c) the 9 to 1 ratio between the incidence of affiliative behaviors and agonistic interactions and the low influence of altruism (Walters, Pearce, & Dahms, 1957; Hartup & Keller, 1960); d) the preponderance of possession-based conflicts among children of these ages (Dawe, 1934; Hartup, 1974); e) the positive correlations between giving and receiving (Charlesworth & Hartup, 1967; Kohn, 1966); f) the relation between affiliation and altruism (Hartup & Keller, 1960); g) the high level and decline of agonistic interactions over early periods in groups of disturbed children (Raush, 1965); h) low interrelations among various forms of altruism (Bryan & London, 1970) -- all these and more tell a story that can be found elsewhere in the literature even though the earlier theoretical perspectives on these relations might have been different.

Now, some ethologists (e.g., McGrew, 1972) claim that the earlier findings are not germane: that they are not based on an evolutionary perspective and that the categories used in the earlier studies are different. The first of these arguments (not advanced by these speakers incidentally) is irrelevant. Data are data regardless of what theory they are based on. And the second argument is not tenable either. The modern investigator is duty-bound to link his data with the earlier results. For example, affiliation here is defined almost identically to associative play and best friend interaction as used in the observational sociometry of Marshall and McCandless (1957) 20 years ago, and

the results are largely the same. Marshall and McCandless demonstrated the existence of more-or-less stable social networks, for example. Certain findings, of course, are different. Marshall and McCandless reported a very low proportion of ignoring in response to positive approach behaviors and, here, Fred Strayer reports a rather high level of such responses (59%). These similarities and differences must be reconciled. Time and money constraints put more burden I think, on the Montreal investigators to link-up with the literature of the 1930s, 1940s, 1950s, and 1960s than they currently have. Florence Goodenough has been dead for 18 years, but we do not need to replicate her very excellent findings. Or,if replication is needed, it should be planned as a replication carefully allowing for differences in methodological and theoretical perspectives.

As will be seen in the Symposium to follow, I believe that detailed analysis of the structural components of children's groups is a most promising area within current developmental/social psychology. These investigators are in the mainstream and doing excellent work. And hence, along with only a few caveats, my congratulations to each and every one of them.

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